DOT HS 807 051   June 1986
Final Report

Synopsis
Police Traffic Services
Management Information System

The United States Government does not endorse products
or manufacturers. Trade or manufacturers' names appear
only because they are considered essential to the object
of this report.

1. Report No. DOT HS 807 051	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle Police Traffic Services, Management Information System (Phase I) Final Report		5. Report Date June 1986
		6. Performing Organization Code
7. Author's) Sohn, David Y.		8. Performing Organization Report No.
9. Performing Organization Name and Address International Computers & Telecommunications, Inc. 932 Hungerford Drive, Suite 16-B Rockville, MD 20850		10. Work Unit No. (TRAIS)
		11. Contract or Grant No. DTNH22-85-C-05081
12. Sponsoring Agency Name and Address National Highway Traffic Safety Administration 400 Seventh Street, SW Washington, D.C. 20590		13. Type of Report and Period Covered Final Report
		14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

In September 1985, the National Highway Traffic Safety Administration (NHTSA) awarded Contract DTNH22-85-C-05081: Police Traffic Services - Management Information System (PTS-MIS) as part of its program to assist local police agencies in developing their capacity to promote traffic safety as part of the Comprehensive Police Traffic Administration and Enforcement Program. Efforts in this contract were to define a set of data elements for Police Traffic Services - Management Information System (PTS-MIS) data bases, and to identify off-the-shelf DBMS packages suitable for developing a cost-effective, reliable, and user-friendly PTS-MIS to be used by local police agencies of less than 200 personnel in size. A task was also to identify and evaluate existing off-the-shelf PTS-MIS software packages for their cost-effectiveness and suitability in the small police agency environment. The contract was the first phase of a two-phased project to collect data on, design, and pilot test a PTS-MIS for micro/personal computers.

17. Key Words Management Information System, MIS, Traffic Safety Management, Traffic Data, Information Management, Traffic Data Base Management	18. Distribution Statement Document is available to the public from the National Technical Information Service, Springfield, VA 22161
19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price

Form DOT F 1700.7 (8-72)   Reproduction of completed page authorized

i

TABLE OF CONTENTS

APPENDICES

APPENDIX A: Uniform Traffic Report

APPENDIX B: PTS-MIS Recommended Data Elements List

APPENDIX C: DBMS Evaluation Process 2 Criteria

APPENDIX D: DBMS Packages (Evaluation Process 2)

APPENDIX E: DBMS Evaluation Process 3 Criteria

APPENDIX F: DBMS Packages Recommended for PTS-MIS
                  (Evaluation Process 3)

APPENDIX G: List of Popular Compatible Computers

APPENDIX H: Survey of Off-the-Shelf PTS Software Run
                  on Personal Computers

APPENDIX I: List of Existing PTS-related Software

ACKNOWLEDGMENTS

GROMNEY, RICHARD, Lt. Colonel
Ohio State Patrol
660 E. Main Street
Columbus, Ohio 43205

JONES, JIM, Commander
Los Angeles Police Department
P.O. Box 30158
Los Angeles, California 90030

LINGAFELTER, LARRY
Chief of Police
316 16th Street
Rock Island, Illinois 61201

MEDEIROS, KENNETH H.
Commission on Accreditation for Law
  Enforcement Agencies, Inc.
4242B Chain Bridge Road
Fairfax, Virginia 22030

MILTON, KENT
California Highway Patrol
P.O. Box 898
2555 First Street
Sacramento, California 95804

O'BRIEN, KENNETH, Deputy Chief
San Diego Police Department
801 West Market
San Diego, California 92101

PATINKIN, HOWARD
Assistant Deputy Superintendent
  of Traffic
Traffic Department Headquarters
Chicago Police Department
 54 W. Hubbard
Chicago, Illinois 60610

FRAGALA, SAMUEL, Lieutenant
Arizona Department of Public Safety
(Intergovernmental Personnel Act)
400 Seventh Street, S.W.
Washington, D.C. 20590

SMITH, CORDELL
Regional Director
Division of Highway Safety
4201 East Arkansas Avenue
Denver, Colorado 80222

THOMPSON, LARRY, Lt. Colonel
Chief, Arizona Highway Patrol
P.O. Box 6638
Phoenix, Arizona 85005

VAN SISTINE, JAMES
Administrator
Division of State Patrol
P.O. Box 7912
Madison, Wisconsin 53707

VOGT, RONALD, Lieutenant
Operational Development
Colorado State Patrol
1325 South Colorado Blvd.
Denver, Colorado 80222

WELLS, DONALD
Assistant Chief
One Police Center Plaza
Middletown, Ohio 45042

WHETSEL, JOHN
Chief of Police
P.O. Box 514
Choctaw, Oklahoma 73020

WOOD, HAROLD, Captain
Montana Highway Patrol
Regional Commander
P.O. Box 3239
Butte, Montana 59702

1.0 BACKGROUND AND SCOPE

This section presents the background, environment and scope for Contract DTNH22-85-C-05081: Police Traffic Services-Management Information System (PTS-MIS).

1.1 Background

Since 1979, the U.S. Department of Transportation (DOT), National Highway Traffic Safety Administration (NHTSA) has been involved with the police community in research and development in several component areas necessary to the most effective application of resources in the solution of their motor vehicle crash problem and to provide an easily applicable evaluation vehicle.

In part, this work has taken the form of development of Selective Traffic Enforcement Program (STEP) manuals, police traffic services (PTS) delivery performance measures for agencies, performance measures for individuals, and through work with the Commission on Accreditation for Law Enforcement Agencies (CALEA) on voluntary traffic related standards for law enforcement agencies.

Through cooperative efforts with the law enforcement community, NHTSA has been able to make available the "what to" (CALEA standards), in specialized cases the "how to" (STEP manuals) and both impact and process measures.

1.2 Environment

The previously enumerated products represent four of the six parts that NHTSA feels is necessary to a Comprehensive Police Traffic Administration and Enforcement Program. The missing elements are:

(1) User friendly software capable of being used to store, retrieve and analyze the data necessary to use the formulae found in the agency performance measures. Performance measures cannot be used without a data base with which one can measure current experience against previous years. Further, the measures will probably not be used if their application requires labor intensive, manual data collection.

Contract DTNH22-85-C-05081   Page 1

(2) A norm or standard which may be used for a comparative analysis of incident and performance levels. For example, the Uniform Crime Report is routinely used by law enforcement agencies to compare their incident and performance levels with cities of similar size and to compare rates of incident increase or decrease against the national experience.

It is estimated that the police agencies to which this project effort is directed consist of less than 200 employees but represent 98 percent of the law enforcement community.

1.3 Benefits

The existence of a voluntary Uniform Traffic Report with consistent data elements would assist in defining PTS-related data elements. Also, the experience in defining a set of data elements for a PTS-MIS and evaluating off-the-shelf DBMS packages for developing a cost-effective PTS-MIS would benefit any future project involving PTS-related data such as the Uniform Traffic Report.

1.4 Rationale for the Contract

The rationale for this contract is to develop a cost-effective, reliable and user-friendly PTS-MIS that may be used to store, retrieve and manage PTS-related data by agencies with less than 200 employees.

1.5 Scope

This contract is the first phase of a two-phased project to collect data on, design and pilot test a PTS-MIS for micro/ personal computers. ICT was awarded Contract DTNH22-85-C-05081: Police Traffic Services-Information Management System under the Authority of Section 8(a) of the Small Business Act 15 USC 637 (a), to perform the tasks of the first phase on September 23, 1985.

ICT divided the entire project into six (6) major tasks for more effective and efficient management of the project and completed the contract in three-man months.

2.0 PROJECT OBJECTIVES AND ACHIEVEMENTS

ICT established six (6) major objectives/tasks to complete the project requirements more efficiently and effectively. This section describes how these individual objectives have been achieved. Each individual task and its accomplishment is described in more detail in Section 3 through 5.

2.1 Objective 1: Review Project Requirements and Approaches

ICT's project staff met with the Contract Technical Manager (CTM) to review the goals, requirements and approaches of the project. As a result, it was confirmed that all the project requirements could be met as outlined in the Statement of Work. During the meeting it was also emphasized that any PTS-MIS to be designed would be intended to serve the needs of relatively small agencies at an affordable cost.

Relevant documents and a list of data elements defined for the Uniform Traffic Report by the NHTSA were provided by the CTM.

2.2 Objective 2: Prepare a Time Scaled Work Plan

As the result of the requirements analysis, an overall timed-scaled plan to complete all the project requirements was prepared and approved by the CTM. Each task was subdivided into activities and the approved work plan shows the completion schedule of each activity as well as each task.

2.3 Objective 3: Recommend a Set of Data Elements for PTS-MIS

In an effort to recommend an optimal set of data elements for a PTS-MIS, a candidate list with all the possible elements included was generated by reviewing the relevant documents and the data elements defined by the NHTSA. A series of extensive review of each candidate element and project meetings with the CTM resulted in defining a set of data elements to recommend to the Government for inclusion in any PTS-MIS.

2.4 Objective 4: Recommend Off-the-Shelf DBMS Packages Suitable for a PTS-MIS

One hundred ninety eight (198) popular personal computer DBMS/Data Manager packages were evaluated using predefined criteria to see which packages would be suitable for developing a cost-effective, reliable and user-friendly PTS-MIS. A three-level evaluation process was used to select the most suitable

off-the-shelf DBMS packages. The evaluation efforts made at the first two levels resulted in selecting the six best DBMS products from the 198 DBMS/Data Managers. Another set of criteria was defined to evaluate the six DBMS packages "more rigorously". Both computer and non-computer personnel performed a series of tests using those criteria on the MS-DOS based computers (IBM PC/AT and TeleVideo PC).

2.5   Objective 5: Identify Existing Off-the-Shelf PTS-related Software Packages

Some of nationwide software vendors and relevant personnel including those of the Department of Public Safety in the 50 states of the U.S. were contacted in order to identify any off-the-shelf PTS-related software based on personal computers that might be used by police agencies at the city, county or state level. Questionnaires and telephone conversations were used to locate such software packages. As a result, it was determined that only a few PTS-related software products are available on the market at a rather expensive cost, that they cannot be readily run by the user until their vendor customizes and installs a PTS-MIS for the particular user and trains the user.

2.6   Objective 6: Prepare a Final Project Report and a Synopsis

Based upon the results of the other tasks, this final report has been prepared.   Also, a project synopsis has been published as an executive summary for this project.

3.0 DEFINING DATA ELEMENTS FOR PTS-MIS DATA BASES

This section describes the effort to define a set of data elements for PTS-MIS data bases.

3.1 Review of Relevant Documents

Several relevant documents on traffic reporting and previous work on developing traffic reporting concepts and practical methodologies were supplied by the CTM. These DOT documents were used in developing a clearer understanding of the desired characteristics of the PTS data base. The primary references used are listed in Section 3.6.

3.2 Generation of Candidate Data Elements

An extensive set of data elements called "Candidate Data Elements" was generated as a result of reviewing the relevant documents. In order to include all the possible data elements, special consideration was given to each of the data element suggestions recorded in the prior studies by the International Association of Chiefs of Police and the Traffic Institute of Northwestern University (see references (1) and (2) in Section 3.6) as well as the standard data elements typically available from official accident reports and citation forms (see references (3) and (4) in Section 3.6).

3.3 Review of NHTSA Data Elements

Appendix A lists the data elements prepared for other DOT efforts in developing a set of elements for a uniform traffic report. Each of the elements in this list was reviewed for proper representation in the PTS-MIS data elements list.

3.4 List of Recommended Data Elements

The candidate list of data elements was further refined in an effort to recommend to the Government a set of data elements that could be used to develop a PTS-MIS. It was assumed that the major sources of data base information will be captured from regular reporting mechanisms including, for example, (1) Traffic Ticket, (2) Accident Report, and (3) Patrol Activity Report. With this in mind, visits were made to a local law enforcement agency to obtain patrol officer comments and to obtain sample traffic citation and accident reporting forms.

As described above an initial set of candidate data elements was compiled. This set represented a much larger data base than practical for present purposes. However, the entire set of the candidate data elements was reviewed carefully to ensure that this initial set included all the data elements necessary for any PTS-MIS. A second-level effort was made to evaluate both expected availability and usefulness of each element of the candidate list. As a result, 133 data elements were selected. Eighty (80) of these 133 data elements were identified as "essential" while the remaining elements could be considered as "desirable but optional".

It was assumed that the user agencies would give preference to those elements which facilitate the generation of operational factors of (1) Problem Identification, (2) Resource Allocation, (3) Productivity Measurement, and (4) Impact Evaluation.

ICT used dBase II DBMS to facilitate the process of generating, manipulating and listing a great number of data elements as part of this task.

3.5 Description of PTS-MIS Recommended Data Elements List

The 133 data elements selected as the result of refinement process are listed in Appendix B. Each data element in this list was assigned a unique identification number and classified as required (essential) or desired (optional). This Appendix also indicates whether each data element is intrinsic (direct) or derived by using one or more factors and intrinsic data elements. All the fields in Appendix B are described below.

    a. DE ID: Identification Number of the Data Element

    b. PRIORITY: "Req'd" = Required (essential)
                    "Des'd" = Desired (optional)

    c. CATEGORY: Category of the Data Element

                 ADM = Administration
                 TLE = Traffic Law Enforcement
                 AIM = Accident Investigation Management
                 TDC = Traffic Direction and Control
                 TAC = Traffic Ancillary Support
                 TE = Traffic Engineering
                 MGM = Management
                 OPR = Operations
                 ACC = Accident Report
                 CIT = Citation

d. TYPE: Type of the Data Element

                   Num = Numeric
                   Char = Character
                   Log = Logical

e. SIZE: Minimum number of digits or characters
                   required to store the Data Element

f. DERIVATION: Indicates whether the Data Element is
                   derived or not.

                   Direct = not derived or intrinsic
                   Derived = derived, not intrinsic

g. DESCRIPTION: Descriptive Name of the Data Element

3.6 List of Documents Reviewed

The following documents were reviewed in the process of defining data elements:

(1) "A Study to Determine Feasibility, Methodology,
     Content, and Utility of a Police Traffic Services
     Management Report," NTS-10-2-05109, International
     Association of Chiefs of Police, May 1983.

(2) "Development of Performance Measures for Police
     Traffic Services," Final Report, The Traffic
     Institute of Northwestern University, April 1984.

(3) "Police Accident Report," FR-300P, Division of Motor
     Vehicles of the Commonwealth of Virginia,
     Jan. 1978.

(4) "Virginia Uniform Summons," Commonwealth of Virginia.

(5) "Manual for a Selective Traffic Enforcement Program
     for Alcohol-Related Motor Vehicle Crashes,"
     DOT HS-820 209, U.S. Department of Transportation,
     National Highway Traffic Safety Administration, July
     1972.

(6) "Manual for Police Traffic Services Personnel Performance Evaluation System: Supervisor's Guide," U.S. Department of Transportation, National Highway Traffic Safety Administration, September 1977.

(7) "Comparative Data Report," International Association of Chiefs of Police, 1974.

(8) "Uniform Crime Reports: Crime in the United States," Department of Justice, Federal Bureau of Investigation, 1982.

(9) "Fatal Accident Reporting System," U.S. Department of Transportation, National Highway Traffic Safety Administration, 1983.

4.0 EVALUATION OF OFF-THE-SHELF DBMS PACKAGES FOR PTS-MIS

4.1 Methodology

The objective of this task was to evaluate the existing off-the-shelf DBMS/Data Manager packages for use on the micro/personal computers and recommend to the Government the most suitable packages to develop a reliable, cost-effective, and user-friendly PTS-MIS for a relatively small police agency. Special emphasis was put on "objective evaluation" with respect to the requirements for any PTS-MIS. For this purpose a three-level evaluation process was devised and used.

Evaluation Process Level 1 consisted of identifying any "reliable" software product that can be classified as a general-purpose DBMS package and used for developing a cost-effective and user-friendly Management Information System (MIS). It should be noted that Data Managers with a limited data base application (unlike general-purpose DBMS packages) were eliminated. As the result of this first level process, 24 of the 198 products originally identified were selected as the candidate DBMS packages for further evaluation.

Evaluation Process Level 2 was to determine the DBMS packages suitable for developing a PTS-MIS as well as general-purpose MIS systems. As the result of this level process, six products were selected as the best packages among the 24 products.

Evaluation Process Level 3 was to evaluate each of the six best DBMS packages on the MS-DOS based personal computers against the criteria defined "more rigorously" for PTS-MIS systems. For this effort, ICT used the actual DBMS programs (not demonstration), manuals, and other documents of the six products (except dBase II and III), directly supplied by the respective vendors. ICT also used both computer and non-computer personnel to test some of the DBMS characteristics by actually designing a MIS on the MS-DOS based computers.

Each level process was performed using a set of predefined evaluation criteria. Each criterion was objectively weighted with respect to the characteristics of the PTS-MIS to be designed in an effort to minimize the possibility of "subjective evaluation".

Each level of the process is described in detail below along with the description of the criteria and the weighting system used for that level.

4.2 Evaluation Process Level 1 (Initial Screening Process)

During the course of performing this level process, information about 198 personal computer DBMS/Data Manager packages currently available on the market was collected using professional books, periodic publications, and product advertisements. There were only two criteria used in this initial screening process, and they are described in detail in Section 4.2.1. Each package was then tested to see if it passed both criteria.

As the result of this effort, 24 of the 198 packages passed the two criteria and they were selected as the candidates for Evaluation Process Level 2.

4.2.1 Description of the Evaluation Process Level 1 Criteria

a. Operating Systems

There are many different types of personal computer hardware, operating systems, and software available in industry. It is a common problem that off-the-shelf personal computer software is not compatible with every type of computer.

Historically, the CP/M operating system developed by Digital Research was predominantly used for 8-bit microcomputers. However, because Microsoft's MS-DOS has become the industry de facto operating system for microcomputers, personal computer manufacturers such as AT&T and NCR have adopted the MS-DOS as one of the principal operating systems available on their computers. By the same token, software vendors, especially DBMS vendors, have tended to design their software systems for compatibility with MS-DOS.

Since it is assumed that the PTS-MIS will be run by so many different users with different types of computers across the country, hardware and software compatibility will be more likely if the DBMS selected for the PTS-MIS is based on MS-DOS.

Therefore, those DBMS packages which do not support the MS-DOS were eliminated by this screening process. It should be noted that the IBM PC-DOS is considered to be equivalent to the MS-DOS.

b. <u>Relational Architecture</u>

The two most common types of DBMS architecture are Relational DBMS and Hierarchical DBMS. A PTS-MIS may have to be expanded or incorporated into a larger MIS and to access a wide variety of data existing on possibly many different files. In these cases, the DBMS for the PTS-MIS should be based on Relational architecture that facilitates the joining or linking of different data files.

In general, Hierarchical architecture tends toward extreme complexity for data integrity because the relationships between the data elements are maintained with sets, linked lists, and pointers telling the system where to go next.
For this reason, the majority of the microcomputer software vendors have not designed their software based on a Hierarchical structure.

Therefore, those Hierarchically structured DBMS packages (such as "Fast Facts" by Innovative Software, Inc. and "ResQ" by Key Software, Inc.) were eliminated by this screening process.

4.2.2 <u>List of Screened DBMS Packages</u>

Appendix D shows the information about the 24 DBMS packages identified as a result of the Initial Screening Process. The name and vendor of particular products are indicated in the fields VENDOR and PRODUCT. This Appendix was prepared for Evaluation Process Level 2.

4.3 <u>Evaluation Process Level 2 (DBMS Selection for PTS-MIS)</u>

In this level process, the 24 DBMS packages screened by Evaluation Process Level 1 were further evaluated using predefined criteria in an effort to recommend to the Government a set of DBMS packages that not only have general-purpose data base capabilities but also are suitable for designing a PTS-MIS. For this purpose a "weighting system" was adopted. Each criterion was assigned the maximum number of weights depending on the importance of the criterion with respect to the PTS-MIS characteristics and requirements.

As the result of this level effort, only six of the 24 DBMS packages under test scored 80 or more weights, and they were selected as the six best DBMS packages for developing a PTS-MIS.

4.3.1 Description of the Evaluation Process Level 2 Criteria

Evaluation Process Level 2 Criteria were divided into 10 different categories and each category was further subdivided into one or more items.

Each criterion was assigned the maximum number of weights and each DBMS was "weighted" against its characteristics. The total weights for each product are shown at the bottom of each page in Appendix D.

Appendix C is the list of Evaluation Process Level 2 Criteria and the number in parentheses in the list indicates weights.

4.3.2 List of DBMS Packages Recommended for PTS-MIS

The total weights shown at the bottom of each page of Appendix D were used to select the six best DBMS products. Six of the 24 products in Appendix D scored 80 or greater weights and consequently were selected as the best DBMS packages for PTS-MIS.

The six best DBMS products were listed in the next page. Each of the six products was further evaluated in Evaluation Process Level 3 against a set of criteria having "more representative and selective" characteristics for any PTS-MIS.

LIST OF THE SIX BEST DBMS PACKAGES

DBMS NAME	VENDOR ADDRESS	PHONE NO.
dBase II	Ashton-Tate 10150 West Jefferson Blvd. Culver City, CA 90230	213-204-5570
dBase III	Ashton-Tate 10150 West Jefferson Blvd. Culver City, CA 90230	213-204-5570
Condor 3	Condor Computer Corp. P.O. Box 8318 2051 South State Street Ann Arbor, MI 48104	313-769-3999
Probase	Data Technology Industries 431 McCormick Avenue San Leandro, CA 94577	415-638-1206
R:base series 5000	Microrim, Inc. 146th Place S.E. Bellevue, WA 98007	206-641-6619
Power-base	Compuware Corporation 32100 Telegraph Road Birmingham, MI 48010	313-540-3706

4.4 Evaluation Process Level 3 (In-depth Evaluation of Selected DBMS)

In this level process, the six DBMS packages selected as the result of Evaluation Process Level 2 were further evaluated using actual hardware and software products against a set of "more rigorous criteria" than those used for Evaluation Process Level 2. The purpose of this level effort was to evaluate each of the six DBMS products using the "actual" computers, programs, and documents, unlike Evaluation Process Level 1 and 2. For this purpose, both computer and non-computer personnel actually ran the actual programs of the six DBMS products on the IBM PC/AT and TeleVideo PC for some of the criteria. As the result of this Level 3 effort, R:base series 5000, Condor 3 and dBase III are the top three products. Each of these three products was compared by actually designing a data base using a partial list of the data elements in Appendix A.

4.4.1 Description of the Evaluation Process Level 3 Criteria

The criteria for the Evaluation Process Level 3 were defined and weighted with respect to the characteristics of the PTS-MIS, namely cost-effectiveness, reliability and user-friendliness.

It should be noted that the degree of simplicity in modifying database structure by non-computer personnel, the number of hours to add/delete/change data elements by non-computer personnel, and software and hardware pricing information were identified as the more important criteria, and thus was assigned greater weights.

The criteria were divided into 14 major categories. Each category was subdivided into one or more items with predefined weights. Appendix E describes the Evaluation Process Level 3 criteria in detail.

4.4.2 Overall Result of Evaluation Process Level 3

Appendix F is a list of the overall evaluation results for each of the six DBMS packages. All the six products were carefully assessed by examining their documents and manuals, conducting interviews with dealers as well as their vendors, and running their programs on the actual hardware by appropriate personnel.

As the result of Evaluation Process Level 3, the following table represents the overall ratings of the six packages:

RANK	DBMS NAME	VENDOR	OVERALL SCORE
1	R:base series 5000	Microrim, Inc. 146th Place S.E. Bellevue, WA 98007 Tel: 206-641-6619	438
2	Condor 3	Condor Computer Corp. 2051 South State St. Ann Arbor, MI 48104 Tel: 313-769-3999	406
3	dBase III	Ashton-Tate 10150 W. Jefferson Boulevard Culver City, CA 90230 Tel: 213-204-5570	398
4	Probase	Data Technology Industries 431 McCormick Avenue San Leandro, CA 94577 Tel: 415-638-1206	381
5	Power-base	Compuware Corporation 32100 Telegraph Road Birmingham, MI 48010 Tel: 313-540-3706	374
6	dBase II	Ashton-Tate 10150 West Jefferson Boulevard Culver City, CA 90230 Tel: 213-204-5570	296

4.5 List of Popular Compatible Computers

It was assumed that if a personal computer software package was based on the MS-DOS, greater system reliability and compatibility would be possible. Therefore, Appendix G is a list of popular computers that support the MS-DOS as their primary operating system. Some of the recently introduced popular computers (e.g., Leading Edge) are not included in this list. Also, other types of popular computers that allegedly support the MS-DOS (such as Apple Mackintosh) are not included in this list, mainly because they their compatibility with the MS-DOS is not possible without high additional costs.

4.6 References Used for Evaluation

The following references as well as telephone conversations with vendors, dealers and users of the products, and publishers of personal computer related books and magazines were used for the overall evaluation:

(1) Microcomputers, Datapro Research Corporation, Delran, NJ 08075

(2) The Rating Book, Software Digest, Inc. Wynnewood, PA 19096

(3) PC TECH Journal P.O. Box 2968, Boulder, CO 80321

(4) The PC World P.O. Box 6700, Bergenfield, NJ 07621

(5) The PC Products P.O. Box 17270, Denver, CO 80217

(6) Bytes 10 Main Street, Peterborough, NH 03548

(7) The Government Computer News 1620 Elton Road, Silver Spring, MD 20903

(8) Dr. Dobb's Journal 2464 Embarcadero Way, Palo Alto, CA 94303

(9) Systems & Software 10 Mulholland Drive, Hasbrouck Heights, NJ 07604

5.0 EVALUATION OF OFF-THE-SHELF PTS-RELATED SOFTWARE

5.1 Methodology

The objective of this task was to identify off-the-shelf personal computer software that has been specifically designed for the management of PTS related data and to evaluate identified software packages to determine which of the recommended data elements could not be processed. In addition, market price, compatible computers and degree of ease in use of the identified software have been identified.

A set of questionnaires was distributed to some of prospective software vendors and relevant personnel including the Department of Public Safety of the fifty (50) states to identify off-the-shelf PTS-related software packages based on personal computers. Other methods such as telephone conversations and publications on microcomputer software reports were used to identify such software and to collect relevant information about each package identified. Appendix H shows information about how PTS related software packages were identified. Appendix I is a list of the existing PTS related software packages and contains more detailed information about each identified product.

5.2 List of Off-the-Shelf PTS-related Software Packages

As the result of this effort, five software packages were identified as PTS-related software run on personal computers. However, these products cannot be considered as true "off-the-shelf" products because they require customization and extensive user training. ICT also determined that these products are not only expensive but also lack vendor/dealer support. Therefore, it is difficult to say which of the PTS data elements defined in this report could be processed.

The following two products are currently used by several agencies after they have been custom designed, and they seem to process more PTS-related data elements than similar products:

PRODUCT	VENDOR
Police Computer System	IPTM Univ. of North Florida 4567 St. Johns Bluff Road Jacksonville, FL 32216 Tel: (904) 646-2722
Traffic Information and Enforcement System(TIES)	CISCO, Inc. 8032 Jumpers Mall, #507 Pasadena, MD 21122 Tel: (301) 760-0780

Following is a list of commercial software packages that cannot be classified as PTS-related software because they process few of the necessary PTS-related data elements, and therefore fail to meet the requirements of a PTS-MIS suitable for small police agency utilization.

PRODUCT	VENDOR
AMS Traffic Ticket Management System	Applied Management Sciences Corporation 721 Clay Avenue Langhorne, PA 19047 Tel: (215) 757-4011
CAR (Computerized Accident Reconstruction)	Computerized Accident Reconstruction P.O. Box 7765 Murray, UT 84107 Tel: (801) 942-6276
EDVAP	Engineering Dynamics Corp. 1026 Lund Street Lake Oswego, OR 97034 Tel: (503) 636-0427

6.0 CONCLUSION

The recommended data elements list for PTS-MIS consists of two sets of data elements: essential data elements and optional data elements, collected from various sources. This list may be considered to be the superset of all the data elements required to use the various formulae found in the agency performance measures and to analyze incidents and performance levels. These data elements may further provide the user agencies with the capabilities of Problem Identification, Resource Allocation, Productivity Measurement, and Impact Evaluation.

A nationwide survey has been conducted in an effort to identify off-the-shelf PTS-related software packages to be used on micro/personal computers. As a result, it has been determined that there are only a few PTS-related software packages available on the market, and they are not only expensive but also cannot be readily used without specific customization and extensive user training. The survey team also concluded that some of these packages can only process a few of the data elements listed for recommendation in this report.

Virtually all of the off-the-shelf micro/personal computer DBMS packages available on the market have been evaluated using a set of criteria defined specifically for PTS-MIS systems. As a result, six products have been selected as the best DBMS packages that could be used to develop PTS-MIS systems. Further, these six best products have been benchmark-tested on MS-DOS based computers using the vendor-supplied programs.

In conclusion, any of these six DBMS packages can be used to design and implement a cost-effective, reliable, and user-friendly PTS-MIS for relatively small agencies on any MS-DOS based computer, using a partial or entire set of the recommended data elements list.

7.0 RECOMMENDATIONS

As a result of this study and evaluation process which ICT undertook, ICT recommends that NHTSA proceed with Phase II by developing a PTS-MIS based upon each one of the six selected DBMS packages using the recommended data elements. These packages should be available for distribution at a nominal cost to those "smaller" police agencies without sufficient personnel or resources to develop their own PTS-MIS. Each of these packages should also be accompanied by comprehensive documents, demonstration and self-training programs, and a complete nationwide support system including a hotline service, at no additional cost to the user. Further, each PTS-MIS package should be designed so that it includes all the possible PTS applications for any police agency and requires no vendor customization nor extensive computer knowledge for operations.

ICT further recommends, as a result of its extensive experience in the development of customized DBMS packages and telecommunications, that NHTSA give serious consideration to the following:

a. That both statewide and nationwide telecommunications networks be developed to link and serve local police agencies through "Statewide PTS Bulletin Boards" and a "Nationwide PTS Bulletin Board." These networks will provide agencies with more effective and efficient means of transferring program or text files, PTS data, and of exchanging electronic mail messages.

b. That a specific PTS-MIS package be designed that is not based on any existing off-the-shelf DBMS product; a software package specifically designed for PTS-MIS would promote optimum user-friendliness, low storage requirements, faster operating speed and greater reliability, at a potentially lower per unit cost if distributed on a national basis.

c. That a software package based on an Optical Character Reader (OCR) be developed in conjunction with a PTS-MIS or as a stand-alone product; this package would automate data entry processes associated with PTS-MIS operations, facilitating greater accuracy with less labor and less dependency upon operator skill.

APPENDIX A

UNIFORM TRAFFIC REPORT

Contract DTNH22-85-C-05081

UNIFORM TRAFFIC REPORT

Total Number of Accidents

P.I. Accidents
Fatal Accidents
Persons Killed (or Fatalities)
Population
Registered Vehicles
Licensed Drivers
VMT
Alcohol Related Accidents
Occupant Restraints in Use
    Child Safety Seats
    Safety Belts
Pedestrian Fatalities
Pedestrian Accidents
Bicycle Accidents Total
Bicycle Injury Accidents
Bicycle Fatal Accidents (included in fatal accidents)
Motorcycle Accidents
Motorcycle Injury Accidents (included in PI accidents)
Motorcycle Fatal Accidents (included in fatal accidents)
Total Number of Hazardous Moving Violation Citations Issued
Total Number of Non-Moving Citations Issued
Total Number of Pedestrian Citations Issued
Total Number of Child Safety Seat Violations Issued
Total Number of Safety Belt Use Violation Citations Issued
Total Number of Citations for:
    speed
    red light
    right-of-way
    stop sign
    improper turn
    following too closely
    colliding
    operating defective vehicle
    full time and attention
    unsafe starting
    fail to yield ROW pedestrian
    driving while intoxicated (provide minimum BAC)
    driving while impaired (provide maximum BAC)

APPENDIX B

PTS-MIS RECOMMENDED DATA ELEMENTS LIST

LEGEND

a. DE ID: Identification Number of the Data Element

b. PRIORITY: "Req'd" = Required (essential)
                 "Des'd" = Desired (optional)

c. CATEGORY: Category of the Data Element

                 ADM = Administration
                 TLE = Traffic Law Enforcement
                 AIM = Accident Investigation Management
                 TDC = Traffic Direction and Control
                 TAC = Traffic Ancillary Support
                 TE = Traffic Engineering
                 MGM = Management
                 OPR = Operations
                 ACC = Accident Report
                 CIT = Citation

d. TYPE: Type of the Data Element

                 Num = Numeric
                 Char = Character
                 Log = Logical

e. SIZE: Minimum number of digits or characters
                 required to store the Data Element

f. DERIVATION: Indicates whether the Data Element is
                 derived or not.

                 Direct = not derived or intrinsic
                 Derived = derived, not intrinsic

g. DESCRIPTION: Descriptive Name of the Data Element

Contract DTNH22-85-C-05081

PTS-MIS RECOMMENDED DATA ELEMENTS LIST

DE ID	PRIO-RITY	CATE-GORY	TYPE	SIZE	DERI-VATION	DESCRIPTION
1	Req'd	ADM	Char	30	Direct	Name of the Agency
2	Req'd	ADM	Char	30	Direct	Name of Department
3	Req'd	ADM	Num	3	Direct	Population
4	Req'd	ADM	Num	6	Direct	Number of Licensed Drivers
5	Req'd	ADM	Num	6	Direct	Number of Registered Vehicles
6	Req'd	ADM	Num	12	Direct	Estimated Number of Vehicle-Miles Driven per Year
7	Req'd	TLE 2.1.1	Num	3	Derived	Total # Citations/Warnings Issued
8	Req'd	TLE 2.1.1	Num	3	Derived	# Citations and Warnings Issued for Exceeded Speed Limit
9	Req'd	TLE 2.1.1	Num	3	Derived	# Citations/Warnings Issued for Overtaking on Hill
10	Req'd	TLE 2.1.1	Num	3	Derived	# Citations/Warnings Issued for Overtaking on Curve
11	Req'd	TLE 2.1.1	Num	3	Derived	# Citations/Warnings Issued for Overtaking at Intersection
12	Req'd	TLE 2.1.1	Num	3	Derived	# Citations and Warnings Issued for Other Improper Passing

DE ID	PRIO-RITY	CATE-GORY	TYPE	SIZE	DERI-VATION	DESCRIPTION
13	Req'd	TLE 2.1.1	Num	3	Derived	# Citations/Warnings Issued for Colliding with Another Vehicle or Pedestrian
14	Req'd	TLE 2.1.1	Num	3	Derived	# Citations/Warnings Issued for Negligent Driving
15	Req'd	TLE 2.1.1	Num	3	Derived	# Citations/Warnings Issued for Reckless Driving
16	Req'd	TLE 2.1.1	Num	3	Derived	# Citations/Warnings Issued for Failure to Yield Right-of-Way to Pedestrian
17	Req'd	TLE 2.1.1	Num	3	Derived	# Citations and Warnings Issued for Not Yielding Right-of-Way
18	Req'd	TLE 2.1.1	Num	3	Derived	# Citations and Warnings Issued for Disregarding Traffic Directions
19	Req'd	TLE 2.1.1	Num	3	Derived	# Citations and Warnings Issued for Hit-and-Run
20	Req'd	TLE 2.1.1	Num	3	Derived	# Citations and Warnings Issued for Driving while Intoxicated
21	Req'd	TLE 2.1.1	Num	3	Derived	# Citations and Warnings Issued for Driving Under the Influence of Alcohol
22	Req'd	TLE 2.1.1	Num	3	Derived	# Citations and Warnings Issued for Operating Defective Equipment

PTS-MIS RECOMMENDED DATA ELEMENT LIST

DE ID	PRIO- RITY	CATE- GORY	TYPE	SIZE	DERI- VATION	DESCRIPTION
23	Req'd	TLE	Num	3	Derived	# Citations/Warnings Issued for Pedestrian Crossing at Intersection Against Signal
24	Req'd	TLE	Num	3	Derived	# Citations/Warnings Issued for Other Pedestrian Offenses
25	Req'd	TLE	Num	3	Derived	# Citations/Warnings Issued for Child Safety Seat Violations
26	Req'd	TLE	Num	3	Derived	# Citations/Warnings Issued for Safety Belt Use Violations
27	Req'd	TLE	Num	3	Derived	# Citations/Warnings Issued for Non-Moving Violations
28	Req'd	TLE	Num	3	Derived	# Citations/Warnings Issued for Moving Hazardous Violations
29	Req'd	AIM 1.3.2	Num	3	Derived	% Known Hit-and-Run Incidents (by Accident Type) for which an At-Scene Major Investigation is Conducted
30	Req'd	MGM 1.1.3	Num	2	Derived	Ratio of Citations to Accidents, by Location and Time
31	Req'd	MGM 1.2.4	Num	3	Derived	# and Type of Accidents During Hours Worked by Specialized Enforcement Units

PTS-MIS RECOMMENDED DATA ELEMENT LIST

DE ID	PRIO-RITY	CATE-GORY	TYPE	SIZE	DERI-VATION	DESCRIPTION
32	Req'd	MGM 1.2.5	Num	3	Derived	# and Type of Enforcement Actions Taken by Specialized Enforcement Units
33	Req'd	MGM 4.1.6	Num	2	Direct	Rating of Report Accuracy Based on Periodic Audits
34	Req'd	MGM 4.2.2	Num	3	Direct	# Errors on Reports Referred Back to MIS System
35	Req'd	MGM 4.2.3	Num	2	Direct	Rating of Report Accuracy from Selected MIS Data Users
36	Req'd	OPR A.5.1	Num	3	Derived	Total DWI Arrests
37	Req'd	OPR	Num	3	Derived	Total DUI (or Lesser Charge) Arrests
38	Req'd	OPR A.5.2	Num	3	Derived	# Breath Tests
39	Req'd	OPR A.5.3	Num	3	Derived	# Blood Tests
40	Req'd	OPR A.5.5	Num	3	Derived	# Urine Tests
41	Req'd	OPR	Num	3	Derived	Average Blood Alcohol Content
42	Req'd	OPR A.5.7	Num	3	Derived	# Convictions DWI

PTS-MIS RECOMMENDED DATA ELEMENT LIST

DE ID	PRIO-RITY	CATE-GORY	TYPE	SIZE	DERI-VATION	DESCRIPTION
43	Req'd	OPR A.5.8	Num	3	Derived	# Convictions DUI or Lesser Charge
44	Req'd	OPR	Num	3	Derived	# Citations Issued for Truck Overweight
45	Req'd	OPR	Num	3	Derived	# Citations Issued for Truck with Defective Equipment
46	Req'd	OPR	Num	3	Derived	# Citations Issued for Truck with Improper Registration
47	Req'd	ACC 1.2	Num	8	Direct	Date of Accident
48	Req'd	ACC 1.3	Char	3	Direct	Day of Week of Accident
49	Req'd	ACC 1.4	Num	8	Direct	Time of Day of Accident
50	Req'd	ACC 1.10	Num	2	Direct	# Vehicles in Accident
51	Req'd	ACC 2.12	Char	6	Direct	# of Accidents Involving Autos
52	Req'd	ACC	Num	3	Derived	# of Accidents Involving Trucks
53	Req'd	ACC	Num	3	Derived	# of Accidents Involving Motorcycles

PTS-MIS RECOMMENDED DATA ELEMENT LIST

DE ID	PRIO-RITY	CATE-GORY	TYPE	SIZE	DERI-VATION	DESCRIPTION
54	Req'd	ACC	Num	3	Derived	# Accidents Involving Bicycles
55	Req'd	ACC 2.31	Char	30	Direct	Location of Accident
56	Req'd	ACC 1.17	Char	6	Direct	Type of Accident (Fatal, Personal Injury, Property Damage)
57	Req'd	ACC	Num	3	Derived	# of Fatal Accidents
58	Req'd	ACC	Num	3	Derived	# Fatal Auto/Truck Accidents
59	Req'd	ACC	Num	3	Derived	# Fatal Motorcycle Accidents
60	Req'd	ACC	Num	3	Derived	# Fatal Pedestrian Accidents
61	Req'd	ACC	Num	3	Derived	# Fatal Bicycle Accidents
62	Req'd	ACC	Num	3	Derived	# Personal Injury Auto/Truck Accidents
63	Req'd	ACC	Num	3	Derived	# Personal Injury Motorcycle Accidents
64	Req'd	ACC	Num	3	Derived	# Personal Injury Bicycle Accidents
65	Req'd	ACC	Num	3	Derived	# Personal Injury Pedestrian Accidents

PTS-MIS RECOMMENDED DATA ELEMENT LIST

DE ID	PRIO-RITY	CATE-GORY	TYPE	SIZE	DERI-VATION	DESCRIPTION
66	Req'd	ACC	Char	6	Direct	Primary Factors Contributing to Accident
67	Req'd	ACC	Num	2	Direct	# of Persons Killed in Accident
68	Req'd	ACC	Num	2	Direct	# of Persons Injured (Excluding Fatalities) in Accident
69	Req'd	ACC	Num	2	Direct	# of Injured (and Killed) Not Using Safety Equipment
70	Req'd	ACC	Num	2	Direct	# of Pedestrians Involved in Accident
71	Req'd	ACC	Log	1	Direct	Accident Classified as Hit-and-Run Incident
72	Req'd	ACC	Log	1	Direct	Offending Driver Identified (If Hit-and-Run Incident)
73	Req'd	ACC	Log	1	Direct	Alcohol Test Was Administered
74	Req'd	ACC	Log	1	Direct	Emergency Care Was Provided by Police Officer
75	Req'd	ACC	Log	1	Direct	A Major At-Scene Investigation Was Conducted
76	Req'd	CIT	Num	6	Direct	Type of Enforcement Action (Arrest, Citation, Warning, Other)

PTS-MIS RECOMMENDED DATA ELEMENT LIST

DE ID	PRIO-RITY	CATE-GORY	TYPE	SIZE	DERI-VATION	DESCRIPTION
77	Req'd	CIT	Char	30	Direct	Date of Enforcement Action
78	Req'd	CIT	Char	6	Direct	Time of Enforcement Action
79	Req'd	TLE	Char	30	Direct	Description of Charges (See Attached List of Codes)
80	Req'd	TLE	Char	30	Direct	Type of Specialized Enforcement Unit Involved
81	Des'd	ADM	Char	10	Direct	Defines Agency by a Unique Number
82	Des'd	ADM	Num	3	Derived	% Staff Time Spent on Traffic Services
83	Des'd	ADM	Num	6	Direct	Mandays Spent in Court
84	Des'd	ADM	Num	2	Direct	Number of Marked Vehicles
85	Des'd	ADM	Num	2	Direct	Number of Unmarked Vehicles
86	Des'd	ADM	Num	2	Direct	Number of Compact Vehicles
87	Des'd	ADM	Num	2	Direct	Number of Full Size Vehicles
88	Des'd	ADM	Num	2	Direct	Number of Motorcycles
89	Des'd	ADM	Num	2	Direct	Number of Other Vehicles

PTS-MIS RECOMMENDED DATA ELEMENT LIST

DE ID	PRIO-RITY	CATE-GORY	TYPE	SIZE	DERI-VATION	DESCRIPTION
90	Des'd	ADM	Num	2	Direct	Number of Aircraft
91	Des'd	ADM	Num	6	Direct	Number of Miles Driven
92	Des'd	ADM	Num	2	Direct	Number of Radar Devices
93	Des'd	ADM	Num	2	Direct	Number of Traffic Direction Signal Devices
94	Des'd	ADM	Num	2	Direct	Number of Speedometers
95	Des'd	ADM	Log	1	Direct	Use of Data Processing Equipment
96	Des'd	TLE 1.4.1	Num	3	Derived	% Convictions of All Traffic Citations and Arrests
97	Des'd	TLE 1.4.1	Num	3	Derived	% Convictions of Hazardous Citations and Arrests
98	Des'd	TLE 1.4.1	Num	3	Derived	% Convictions of Accident Citations and Arrests
99	Des'd	TLE 1.4.1	Num	3	Derived	% Convictions of Pedestrian Citations and Arrests
100	Des'd	TLE 1.4.2	Num	4	Derived	# Convictions of All Traffic Citations and Arrests
101	Des'd	TLE 1.4.2	Num	4	Derived	# Convictions of Accident Citations and Arrests

PTS-MIS RECOMMENDED DATA ELEMENT LIST

DE ID	PRIO-RITY	CATE-GORY	TYPE	SIZE	DERI-VATION	DESCRIPTION
102	Des'd	TLE 1.4.2	Num	3	Derived	# Convictions of Pedestrians Citations and Arrests
103	Des'd	TLE 1.4.3	Num	3	Derived	% Citations and Arrests Uncontested in Court
104	Des'd	TLE 1.4.4	Num	3	Derived	# Citations and Arrests Dismissed
105	Des'd	TLE 1.4.4	Num	3	Derived	# Citations and Arrests Amended
106	Des'd	TLE 1.4.4	Num	3	Direct	# Citations and Arrests Withdrawn
107	Des'd	TLE 2.1.2	Num	3	Derived	% General Patrol Time Spent on TLE
108	Des'd	TLE 2.5.1	Num	4	Direct	# Officer-Hours Spent in Traffic Court
109	Des'd	AIM 1.3.1	Num	3	Derived	% Fatal and PI Accidents Known to Have Occurred for which an At-Scene Major Investigation is Conducted
110	Des'd	AIM 1.4.1	Log	1	Direct	Existence of a Traffic Records System which Employs Accident Report Date for Reports and Analysis

PTS-MIS RECOMMENDED DATA ELEMENT LIST

DE ID	PRIO- RITY	CATE- GORY	TYPE	SIZE	DERI- VATION	DESCRIPTION
111	Des'd	AIM 1.4.2	Log	1	Direct	Regular Production of a Synthesis of Special Accident Investigation Reports Identifying Patterns, Contributing Features and Issues
112	Des'd	AIM 1.4.3	Num	2	Direct	Reduction in No. of Accidents Involving Specific Violations Identified through Analysis as Being Over-Represented in Accidents
113	Des'd	AIM 1.4.4	Num	2	Direct	Reduction in Number of Accidents at Specific High Accident Locations Identified through Accident Pattern Analysis
114	Des'd	AIM 1.4.5	Num	2	Direct	Existence of Process for Periodic Review of Accident Investigation Policy and Procedure
115	Des'd	AIM 2.1.1	Num	3	Derived	% Hit-and-Run Accidents by Type and by Location in which the Offending Driver is Identified
116	Des'd	AIM 2.3.1	Num	3	Direct	# Officer-Hours Spent in Traffic Court
117	Des'd	AIM 3.1.1	Num	2	Direct	% Officers Trained to Provide Immediate Emergency Medical Care
118	Des'd	AIM 3.1.2	Num	2	Direct	% Emergency Situations Requiring Medical Care where Care is Provided by a Police Officer
119	Des'd	TAS 1.2.2	Num	2	Direct	% Change in Accidents

PTS-MIS RECOMMENDED DATA ELEMENT LIST

DE ID	PRIO-RITY	CATE-GORY	TYPE	SIZE	DERI-VATION	DESCRIPTION
120	Des'd	MGM 1.1.2	Num	3	Derived	Hours of Patrol per Citation
121	Des'd	OPR A.4.2	Num	3	Derived	% Speeding Arrests from Radar
122	Des'd	OPR A.4.3	Num	3	Derived	% Speeding Arrests from Patrol
123	Des'd	OPR A.5.6	Num	3	Derived	# Refusals for Alcohol Test
124	Des'd	OPR A.6.3	Num	3	Derived	# Vehicle Defects Cited as Contributing Factor to Collision
125	Des'd	OPR A.6.6	Num	3	Direct	# Safety Equipment Repair Orders Issued
126	Des'd	OPR A.7.4	Num	3	Direct	# Portable Scales
127	Des'd	OPR A.7.7	Num	3	Derived	# Trucks Checked/Inspected
128	Des'd	OPR A.7.8	Num	3	Derived	# Trucks Weighed
129	Des'd	OPR A.7.9	Num	2	Derived	# Citations Issued for Truck Overweight

PTS-MIS RECOMMENDED DATA ELEMENT LIST

DE ID	PRIO-RITY	CATE-GORY	TYPE	SIZE	DERI-VATION	DESCRIPTION
130	Des'd	SUP C.2	Num	2	Direct	# Personnel Assigned to Public Information and Safety Education Programs
131	Des'd	SUP D.5	Num	3	Direct	# Staff Received In-Service-Training per Year
132	Des'd	SUP D.5	Num	3	Direct	# Staff Received Roll Call Training per Year
133	Des'd	SUP D.5	Num	3	Direct	# Staff Received Other Training per Year

APPENDIX C

DBMS EVALUATION PROCESS 2 CRITERIA

DBMS EVALUATION PROCESS 2 CRITERIA

(1) **SYSTEM CHARACTERISTICS** (10)

    This category is used to test the system environment in which the DBMS under evaluation is run.

    (a) **Operating System** (7)

        MS-DOS   (7)

    (b) **Minimum Memory Required (bytes)** (3)

less than or equal to 128 K	(3)
less than or equal to 256 K	(2)
less than or equal to 512 K	(1)
greater than 512 K	(0)

(2) **PROGRAM CHARACTERISTICS** (10)

    (a) **Programming/Procedural Language** (4)

        It is imperative that the PTS-MIS be easy to learn and user-friendly, because it will be used most often by non-computer personnel. It is recognized that the PTS-MIS may have to be custom designed in order to provide those non-computer per-sonnel with user-friendlier features and that some of the DBMS features such as automating command sequences cannot be implemented using only manual commands.

        Therefore, the DBMS for the PTS-MIS should support a programming language to facilitate the automation of man-machine interfaces.

        If a DBMS has a set of powerful language statements such as IF-THEN-ELSE, DO-WHILE and REPEAT-UNTIL, it is weighed with 4. If it has only a procedural language, it is weighed with 2 or 1 depending upon its instruction set.

    (b) **English-like Query Language** (4)

    (c) **Automatic Update and Integrity** (2)

(3) DATABASE FILE CHARACTERISTICS (10)

   (a) No. of Records per File (2)

     greater than or equal to 64K   (2)
     less than 64 K   (1)

   (b) No. of Fields per Record (2)

     greater than 32   (2)
     less than or equal to 32   (1)

   (c) No. of Characters per Field (2)

     greater than 128   (2)
     less than or equal to 128   (1)

   (d) No. of Characters of Index Key (1)

     greater than or equal to 1   (1)

   (e) No. of Fields per Index Key (1)

     greater than or equal to 1   (1)

   (f) No. of Index Keys per File (1)

     greater than or equal to 1   (1)

   (g) File Transfer across Drives (1)

(4) DATABASE STRUCTURE CHARACTERISTICS (10)

   (a) Add Fields (4)

   (b) Add Records (4)

   (c) Logical Fields (2)

(5) SORTING/INDEXING (10)

   (a) Ascending (4)

   (b) Descending (3)

   (c) Indexing based on Multiple Fields (3)

(6) <u>REPORT GENERATOR</u> (10)

    (a) <u>Free Form Placement of Headings</u> (3)

    (b) <u>Free Form Placement of Output</u> (3)

    (c) <u>Output Values from Field Variables</u> (2)

    (d) <u>Interactive Printer Control</u> (2)

(7) <u>Documentation Support</u> (10)

    (a) <u>On-screen Interactive Tutorial</u> (4)

    (b) <u>On-screen Help Menu at all Levels</u> (5)

    (c) <u>Audio/Video Training Aids</u> (1)

(8) <u>VENDOR SUPPORT</u> (10)

    (a) <u>Demonstration Diskette</u> (4)

    (b) <u>Hotline Support from Vendor</u> (4)

    (c) <u>Newsletters</u> (2)

(9) <u>PRICING</u> (10)

    (a) <u>One-time License/Purchase Price</u> (8)

less than $250	(8)
less than $700	(4)
less than $1,000	(2)
greater than or equal to $1,000	(1)

    (b) <u>Cost for Updates</u> (2)

less than $100	(2)
greater than or equal to $100	(1)

(10) <u>INDUSTRY ACCEPTANCE</u> (10)

    (a) <u>Date of First Installation</u> (3)

before or in 1982	(3)
before or in 1983	(2)
before or in 1984	(1)

(b) <u>Public Awareness/Advertisements</u> (7)

high	(7)
moderate	(4)
low	(1)

APPENDIX D

DBMS PACKAGES (EVALUATION PROCESS 2)

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
PRODUCT VersaForm XL			
VENDOR App. SW Technology			
SYSTEM CHARACTERISTICS (10)			
Operating System	MS-DOS	7	7
Minimum Memory Required (bytes)	192K	3	2
PROGRAM CHARACTERISTICS (10)			
Programming Language	Yes	4	4
English-like Query Language	No	4	0
Automatic Update & Integrity	No	2	0
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	4M	2	2
No. of Fields per Record	75	2	2
No. of Characters per Field	78	2	1
No. of Characters of Index Key	40	1	1
No. of Fields per Index Key	2	1	1
No. of Index Keys per File	---	1	0
File Transfer across Drives	Yes	1	1
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	No	2	0
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	Yes	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	No	3	0
Output Values from Field Variables	No	2	0
Interactive Printer Control	No	2	0
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	Yes	4	4
On-screen Help Menu at All Levels	Yes	5	5
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	Yes	4	4
Hotline Support from Vendor	Yes	4	4
Newsletters	No	2	0
PRICING (10)			
One-time License/Purchase Price	$449	8	4
Cost for Updates	---	2	0
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	June 1984	3	1
Public Awareness/Advertisements	Low	7	1
TOTAL: (100)		100	65

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT: dBase II / VENDOR: Ashton-Tate PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
SYSTEM CHARACTERISTICS (10)			
Operating System	MS-/PC-DOS	7	7
Minimum Memory Required (bytes)	128K	3	3
PROGRAM CHARACTERISTICS (10)			
Programming Language	Yes	4	4
English-like Query Language	Yes	4	4
Automatic Update & Integrity	Yes	2	2
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	65,535	2	2
No. of Fields per Record	32	2	1
No. of Characters per Field	254	2	2
No. of Characters of Index Key	100	1	1
No. of Fields per Index Key	Unlimited	1	1
No. of Index Keys per File	Unlimited	1	1
File Transfer across Drives	No	1	0
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	Yes	2	2
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	Yes	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	Yes	3	3
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	Yes	2	2
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	Yes	4	4
On-screen Help Menu at All Levels	Yes	5	5
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	Yes	4	4
Hotline Support from Vendor	Yes	4	4
Newsletters	Yes	2	2
PRICING (10)			
One-time License/Purchase Price	$495	8	4
Cost for Updates	---	2	0
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	1981	3	3
Public Awareness/Advertisements	High	7	7
TOTAL: (100)		100	91

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
PRODUCT dBASE III			
VENDOR Ashton-Tate			
SYSTEM CHARACTERISTICS (10)			
Operating System	PC-/MS-DOS	7	7
Minimum Memory Required (bytes)	256K	3	2
PROGRAM CHARACTERISTICS (10)			
Programming Language	Yes	4	4
English-like Query Language	Yes	4	4
Automatic Update & Integrity	Yes	2	2
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	1 billion	2	2
No. of Fields per Record	128	2	2
No. of Characters per Field	254	2	2
No. of Characters of Index Key	100	1	1
No. of Fields per Index Key	7	1	1
No. of Index Keys per File	Unlimited	1	1
File Transfer across Drives	Yes	1	1
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	Yes	2	2
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	Yes	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	Yes	3	3
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	No	2	0
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	No	4	0
On-screen Help Menu at All Levels	Yes	5	5
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	No	4	0
Hotline Support from Vendor	Yes	4	4
Newsletters	Yes	2	2
PRICING (10)			
One-time License/Purchase Price	$695	8	4
Cost for Updates	-----	2	0
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	June 1984	3	1
Public Awareness/Advertisements	High	7	7
TOTAL: (100)		100	80

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT DATA	Data Ace	
	VENDOR	Computer SW Design,Inc	
	PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
SYSTEM CHARACTERISTICS (10)			
Operating System	PC-/MS-DOS	7	7
Minimum Memory Required (bytes)	256K	3	1
PROGRAM CHARACTERISTICS (10)			
Programming Language	Yes	4	3
English-like Query Language	Yes	4	4
Automatic Update & Integrity	Yes	2	2
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	Disk size	2	2
No. of Fields per Record	300	2	2
No. of Characters per Field	254	2	2
No. of Characters of Index Key	27	1	1
No. of Fields per Index Key	3	1	1
No. of Index Keys per File	Unlimited	1	1
File Transfer across Drives	Yes	1	1
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	Yes	2	2
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	Yes	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	Yes	3	3
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	Yes	2	2
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	No	4	0
On-screen Help Menu at All Levels	Yes	5	5
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	Yes	4	4
Hotline Support from Vendor	Yes	4	4
Newsletters	No	2	0
PRICING (10)			
One-time License/Purchase Price	$645	8	4
Cost for Updates	$50	2	2
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	May 1981	3	3
Public Awareness/Advertisements	Low	7	0
TOTAL: (100)		100	79

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
PRODUCT Condor 3			
VENDOR Condor Comp, Corp.			
SYSTEM CHARACTERISTICS (10)			
Operating System	MS-/PC-DOS	7	7
Minimum Memory Required (bytes)	64K or 80K	3	3
PROGRAM CHARACTERISTICS (10)			
Programming Language	No	4	0
English-like Query Language	Yes	4	4
Automatic Update & Integrity	Yes	2	2
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	65,534	2	2
No. of Fields per Record	127	2	2
No. of Characters per Field	127	2	1
No. of Characters of Index Key	127	1	1
No. of Fields per Index Key	8	1	1
No. of Index Keys per File	1	1	1
File Transfer across Drives	Yes	1	1
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	No	2	0
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	Yes	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	Yes	3	3
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	No	2	0
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	No	4	0
On-screen Help Menu at All Levels	Yes	5	5
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	Yes	4	4
Hotline Support from Vendor	Yes	4	4
Newsletters	No	2	0
PRICING (10)			
One-time License/Purchase Price	$650	8	4
Cost for Updates	$85	2	2
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	May 1977	3	3
Public Awareness/Advertisements	High	7	7
TOTAL: (100)		100	80

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT C/Tools VENDOR Conetic Systems, Inc.		
	PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
SYSTEM CHARACTERISTICS (10)			
Operating System	MS-/PC-DOS	7	7
Minimum Memory Required (bytes)	128K	3	3
PROGRAM CHARACTERISTICS (10)			
Programming Language	Yes	4	4
English-like Query Language	Yes	4	4
Automatic Update & Integrity	Yes	2	2
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	2 Billion	2	2
No. of Fields per Record	32,767	2	2
No. of Characters per Field	32,767	2	2
No. of Characters per Index Key	50 p;32K s	1	1
No. of Fields per Index Key	8	1	1
No. of Index Keys per File	127	1	1
File Transfer across Drives	No	1	0
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	Yes	2	2
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	No	3	0
Indexing based on Multiple Fields	Yes	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	Yes	3	3
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	No	2	0
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	No	4	0
On-screen Help Menu at All Levels	Yes	5	5
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	Yes	4	4
Hotline Support from Vendor	Yes	4	4
Newsletters	Yes	2	2
PRICING (10)			
One-time License/Purchase Price	Machine dep	8	1
Cost for Updates	$200	2	1
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	July 1983	3	2
Public Awareness/Advertisements	Low	7	1
TOTAL: (100)		100	74

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT Revelation		
	VENDOR Cosmos, Inc.		
	PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
SYSTEM CHARACTERISTICS (10)			
Operating System	MS-/PC-DOS	7	7
Minimum Memory Required (bytes)	320K	3	1
PROGRAM CHARACTERISTICS (10)			
Programming Language	Yes	4	4
English-like Query Language	Yes	4	4
Automatic Update & Integrity	Yes	2	2
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	Unlimited	2	2
No. of Fields per Record	32,000	2	2
No. of Characters per Field	65,000	2	2
No. of Characters of Index Key	128 bytes	1	1
No. of Fields per Index Key	Unlimited	1	1
No. of Index Keys per File	Unlimited	1	1
File Transfer across Drives	No	1	0
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	Yes	2	2
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	Yes	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	Yes	3	3
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	Yes	2	2
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	Yes	4	4
On-screen Help Menu at All Levels	Yes	5	5
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	Yes	4	0
Hotline Support from Vendor	Yes	4	4
Newsletters	Yes	2	2
PRICING (10)			
One-time License/Purchase Price	$950	8	2
Cost for Updates	$50	2	2
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	March 1983	3	2
Public Awareness/Advertisements	Moderate	7	0
TOTAL: (100)		100	78

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT VENDOR PRODUCT DATA	Custom File Custom Data MAXIMUM WEIGHTS	PRODUCT WEIGHTS
SYSTEM CHARACTERISTICS (10)			
Operating System	PC-DOS 2.0	7	7
Minimum Memory Required (bytes)	256k	3	2
PROGRAM CHARACTERISTICS (10)			
Programming Language	Yes	4	4
English-like Query Language	No	4	0
Automatic Update & Integrity	No	2	0
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	10,000	2	1
No. of Fields per Record	500	2	2
No. of Characters per Field	1022	2	2
No. of Characters of Index Key	1022	1	1
No. of Fields per Index Key	500	1	1
No. of Index Keys per File	500	1	1
File Transfer across Drives	No	1	0
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	Yes	2	2
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	Yes	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	Yes	3	3
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	Yes	2	2
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	Yes	4	4
On-screen Help Menu at All Levels	Yes	5	5
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	Yes	4	4
Hotline Support from Vendor	Yes	4	4
Newsletters	No	2	0
PRICING (10)			
One-time License/Purchase Price	$395	8	4
Cost for Updates	$50	2	2
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	Sept. 1984	3	1
Public Awareness/Advertisements	Low	7	1
TOTAL: (100)		100	76

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT DataFlex VENDOR Data Access Corp. PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
SYSTEM CHARACTERISTICS (10)			
Operating System	PC-DOS	7	7
Minimum Memory Required (bytes)	64K or 80K	3	3
PROGRAM CHARACTERISTICS (10)			
Programming Language	Yes	4	4
English-like Query Language	No	4	0
Automatic Update & Integrity	Yes	2	2
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	64K	2	2
No. of Fields per Record	255	2	2
No. of Characters per Field	255	2	2
No. of Characters of Index Key	120	1	1
No. of Fields per Index Key	9	1	1
No. of Index Keys per File	6	1	1
File Transfer across Drives	Yes	1	1
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	No	2	0
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	Yes	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	Yes	3	3
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	Yes	2	2
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	Yes	4	4
On-screen Help Menu at All Levels	Yes	5	5
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	Yes	4	4
Hotline Support from Vendor	Yes	4	4
Newsletters	Yes	2	2
PRICING (10)			
One-time License/Purchase Price	$750-$1,250	8	1
Cost for Updates	$100	2	1
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	Dec. 1981	3	3
Public Awareness/Advertisements	Low	7	1
TOTAL: (100)		100	79

DBMS PACKAGES (EVALUATION PROCESS 2)

| EVALUATION CRITERIA (WEIGHTS) | PRODUCT | Probase | |
| | VENDOR | Data Tech. Industries | |
	PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
SYSTEM CHARACTERISTICS (10)			
Operating System	PC-/MS-DOS	7	7
Minimum Memory Required (bytes)	192K	3	2
PROGRAM CHARACTERISTICS (10)			
Programming Language	Yes	4	4
English-like Query Language	Yes	4	4
Automatic Update & Integrity	Yes	2	2
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	65,536	2	2
No. of Fields per Record	64	2	2
No. of Characters per Field	64	2	1
No. of Characters of Index Key	64	1	1
No. of Fields per Index Key	64	1	1
No. of Index Keys per File	10	1	1
File Transfer across Drives	Yes	1	1
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	Yes	2	2
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	Yes	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	Yes	3	3
Output Values from Field Variables	No	2	0
Interactive Printer Control	Yes	2	2
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	Yes	4	4
On-screen Help Menu at All Levels	Yes	5	5
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	Yes	4	4
Hotline Support from Vendor	Yes	4	4
Newsletters	No	2	0
PRICING (10)			
One-time License/Purchase Price	$650	8	4
Cost for Updates	---	2	0
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	Sept. 1982	3	3
Public Awareness/Advertisements	Low	7	1
TOTAL: (100)		100	81

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT Day One VENDOR Day One Software Inc.		
	PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
SYSTEM CHARACTERISTICS (10)			
Operating System	MS-/PC-DOS	7	7
Minimum Memory Required (bytes)	64K or 128K:	3	3
PROGRAM CHARACTERISTICS (10)			
Programming Language	No	4	0
English-like Query Language	No	4	0
Automatic Update & Integrity	Yes	2	2
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	65,534	2	2
No. of Fields per Record	891	2	2
No. of Characters per Field	254	2	2
No. of Characters of Index Key	60	1	1
No. of Fields per Index Key	3	1	1
No. of Index Keys per File	5	1	1
File Transfer across Drives	No	1	0
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	No	2	0
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	Yes	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	Yes	3	3
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	No	2	0
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	Yes	4	4
On-screen Help Menu at All Levels	Yes	5	5
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	Yes	4	4
Hotline Support from Vendor	Yes	4	4
Newsletters	Yes	2	2
PRICING (10)			
One-time License/Purchase Price	$695	8	4
Cost for Updates	----	2	0
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	Sept. 1983	3	2
Public Awareness/Advertisements	Low	7	1
TOTAL: (100)		100	73

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT VENDOR PRODUCT DATA	Kaleidoscope DBI Software Products	
		MAXIMUM WEIGHTS	PRODUCT WEIGHTS
SYSTEM CHARACTERISTICS (10)			
Operating System	MS-DOS	7	7
Minimum Memory Required (bytes)	128K	3	3
PROGRAM CHARACTERISTICS (10)			
Programming Language	Yes	4	4
English-like Query Language	Yes	4	4
Automatic Update & Integrity	No	2	0
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	32,767	2	1
No. of Fields per Record	20/180	2	1
No. of Characters per Field	255/2,295	2	2
No. of Characters of Index Key	255	1	1
No. of Fields per Index Key	1	1	1
No. of Index Keys per File	20	1	1
File Transfer across Drives	No	1	0
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	No	2	0
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	Yes	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	Yes	3	3
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	Yes	2	2
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	No	4	0
On-screen Help Menu at All Levels	No	5	0
Audio/Video Training Aids	Yes	1	1
VENDOR SUPPORT (10)			
Demonstration Diskette	Yes	4	4
Hotline Support from Vendor	Yes	4	4
Newsletters	Yes	2	2
PRICING (10)			
One-time License/Purchase Price	$695	8	4
Cost for Updates	---	2	0
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	Feb. 1984	3	1
Public Awareness/Advertisements	Low	7	1
TOTAL: (100)		100	70

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
	PRODUCT: NPL Rel.Database System VENDOR: DeskTop Software Corp.		
SYSTEM CHARACTERISTICS (10)			
Operating System	MS-DOS	7	7
Minimum Memory Required (bytes)	256K	3	2
PROGRAM CHARACTERISTICS (10)			
Programming Language	Yes	4	4
English-like Query Language	Yes	4	4
Automatic Update & Integrity	Yes	2	2
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	Disk size	2	2
No. of Fields per Record	250	2	2
No. of Characters per Field	999	2	2
No. of Characters of Index Key	512	1	1
No. of Fields per Index Key	1	1	1
No. of Index Keys per File	20	1	1
File Transfer across Drives	Yes	1	1
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	No	2	0
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	No	3	0
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	Yes	3	3
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	Yes	2	2
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	Yes	4	4
On-screen Help Menu at All Levels	No	5	0
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	Yes	4	4
Hotline Support from Vendor	Yes	4	4
Newsletters	No	2	0
PRICING (10)			
One-time License/Purchase Price	$595	8	4
Cost for Updates	----	2	0
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	June 1984	3	1
Public Awareness/Advertisements	Low	7	1
TOTAL: (100)		100	72

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
PRODUCT Info-Gen/Info-Reporter			
VENDOR Info-Pros. Inc.			
SYSTEM CHARACTERISTICS (10)			
Operating System	MS-/PC-DOS	7	7
Minimum Memory Required (bytes)	64K	3	3
PROGRAM CHARACTERISTICS (10)			
Programming Language	Yes	4	4
English-like Query Language	Yes	4	4
Automatic Update & Integrity	Yes	2	2
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	32,767	2	1
No. of Fields per Record	50	2	2
No. of Characters per Field	--	2	0
No. of Characters of Index Key	10	1	1
No. of Fields per Index Key	126	1	1
No. of Index Keys per File	10	1	1
File Transfer across Drives	Yes	1	1
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	No	2	0
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	No	3	0
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	Yes	3	3
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	No	2	0
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	Yes	4	4
On-screen Help Menu at All Levels	Yes	5	5
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	No	4	0
Hotline Support from Vendor	Yes	4	4
Newsletters	No	2	0
PRICING (10)			
One-time License/Purchase Price	$300	8	4
Cost for Updates	$25	2	2
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	Feb. 1983	3	2
Public Awareness/Advertisements	Low	7	1
TOTAL: (100)		100	72

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT Data Systems/IT SW Keep VENDOR Martin Marietta PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
SYSTEM CHARACTERISTICS (10)			
Operating System	MS-DOS	7	7
Minimum Memory Required (bytes)	192K	3	2
PROGRAM CHARACTERISTICS (10)			
Programming Language	Yes	4	4
English-like Query Language	No	4	0
Automatic Update & Integrity	Yes	2	2
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	32,767	2	1
No. of Fields per Record	99	2	2
No. of Characters per Field	70	2	1
No. of Characters of Index Key	20	1	1
No. of Fields per Index Key	1	1	1
No. of Index Keys per File	3	1	1
File Transfer across Drives	Yes	1	1
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	No	2	0
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	Yes	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	Yes	3	3
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	Yes	2	2
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	No	4	0
On-screen Help Menu at All Levels	Yes	5	5
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	Yes	4	4
Hotline Support from Vendor	Yes	4	4
Newsletters	No	2	0
PRICING (10)			
One-time License/Purchase Price	$450	8	4
Cost for Updates	Min.	2	1
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	Nov. 1983	3	2
Public Awareness/Advertisements	Low	7	1
TOTAL: (100)		100	72

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT DATA MDBS III Micro Data Base Sys. Inc	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
SYSTEM CHARACTERISTICS (10)			
Operating System	MS-/PC-DOS	7	7
Minimum Memory Required (bytes)	64K	3	3
PROGRAM CHARACTERISTICS (10)			
Programming Language	No	4	0
English-like Query Language	Yes	4	4
Automatic Update & Integrity	Yes	2	2
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	Unlimited	2	2
No. of Fields per Record	254	2	2
No. of Characters per Field	64,000	2	2
No. of Characters of Index Key	64,000	1	1
No. of Fields per Index Key	64,000	1	1
No. of Index Keys per File	Unlimited	1	1
File Transfer across Drives	No	1	0
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	Yes	2	2
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	Yes	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	Yes	3	3
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	Yes	2	2
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	No	4	0
On-screen Help Menu at All Levels	No	5	0
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	Yes	4	4
Hotline Support from Vendor	Yes	4	4
Newsletters	No	2	0
PRICING (10)			
One-time License/Purchase Price	Varies	8	1
Cost for Updates	------	2	0
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	Dec. 1981	3	3
Public Awareness/Advertisements	Low	7	1
TOTAL: (100)		100	68

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT VENDOR PRODUCT DATA	DMS-III Microline, Inc. MAXIMUM WEIGHTS	PRODUCT WEIGHTS
SYSTEM CHARACTERISTICS (10)			
Operating System	MS-/PC-DOS	7	7
Minimum Memory Required (bytes)	128K	3	3
PROGRAM CHARACTERISTICS (10)			
Programming Language	Yes	4	4
English-like Query Language	No	4	0
Automatic Update & Integrity	Yes	2	2
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	32,767	2	1
No. of Fields per Record	60	2	2
No. of Characters per Field	60	2	1
No. of Characters of Index Key	60	1	1
No. of Fields per Index Key	1	1	1
No. of Index Keys per File	5	1	1
File Transfer across Drives	Yes	1	1
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	No	2	0
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	Yes	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	Yes	3	3
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	No	2	0
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	Yes	4	4
On-screen Help Menu at All Levels	No	5	0
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	Yes	4	4
Hotline Support from Vendor	Yes	4	4
Newsletters	Yes	2	2
PRICING (10)			
One-time License/Purchase Price	$295	8	4
Cost for Updates	$25	2	2
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	April 1983	3	2
Public Awareness/Advertisements	Low	7	1
TOTAL: (100)		100	73

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT DATA	R:base Series 5000 Microrim, Inc.	
		MAXIMUM WEIGHTS	PRODUCT WEIGHTS
SYSTEM CHARACTERISTICS (10)			
Operating System	MS-/PC-DOS	7	7
Minimum Memory Required (bytes)	256K	3	2
PROGRAM CHARACTERISTICS (10)			
Programming Language	Yes	4	4
English-like Query Language	Yes	4	4
Automatic Update & Integrity	Yes	2	2
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	2.5 billion	2	2
No. of Fields per Record	400	2	2
No. of Characters per Field	1530	2	2
No. of Characters of Index Key	1530	1	1
No. of Fields per Index Key	1	1	1
No. of Index Keys per File	400	1	1
File Transfer across Drives	No	1	0
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	No	2	0
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	Yes	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	Yes	3	3
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	No	2	0
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	No	4	0
On-screen Help Menu at All Levels	Yes	5	5
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	Yes	4	4
Hotline Support from Vendor	Yes	4	4
Newsletters	Yes	2	2
PRICING (10)			
One-time License/Purchase Price	$700	8	4
Cost for Updates	$150 yr.	2	1
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	May 1985	3	0
Public Awareness/Advertisements	High	7	7
TOTAL: (100)		100	81

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT Oracle VENDOR Oracle Corporation PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
SYSTEM CHARACTERISTICS (10)			
Operating System	MS-/PC-DOS	7	7
Minimum Memory Required (bytes)	512K	3	1
PROGRAM CHARACTERISTICS (10)			
Programming Language	Yes	4	4
English-like Query Language	Yes	4	4
Automatic Update & Integrity	Yes	2	2
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	Unlimited	2	2
No. of Fields per Record	254	2	2
No. of Characters per Field	16,000	2	2
No. of Characters of Index Key	1024	1	1
No. of Fields per Index Key	Unlimited	1	1
No. of Index Keys per File	Unlimited	1	1
File Transfer across Drives	Yes	1	1
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	No	2	0
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	Yes	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	Yes	3	3
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	Yes	2	2
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	No	4	0
On-screen Help Menu at All Levels	Yes	5	5
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	Yes	4	4
Hotline Support from Vendor	Yes	4	4
Newsletters	Yes	2	2
PRICING (10)			
One-time License/Purchase Price	$1,000	8	1
Cost for Updates	-----	2	0
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	August 1984	3	1
Public Awareness/Advertisements	Low	7	1
TOTAL: (100)		100	74

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT Power-Base		
	VENDOR Power-Base Syst. Inc.		
	PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
SYSTEM CHARACTERISTICS (10)			
Operating System	PC-DOS1.1	7	7
Minimum Memory Required (bytes)	256K	3	2
PROGRAM CHARACTERISTICS (10)			
Programming Language	No	4	0
English-like Query Language	Yes	4	4
Automatic Update & Integrity	Yes	2	2
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	65,534	2	2
No. of Fields per Record	64	2	2
No. of Characters per Field	80	2	1
No. of Characters of Index Key	20	1	1
No. of Fields per Index Key	1	1	1
No. of Index Keys per File	6	1	1
File Transfer across Drives	--	1	0
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	Yes	2	2
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	Yes	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	No	3	0
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	No	2	0
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	Yes	4	4
On-screen Help Menu at All Levels	Yes	5	5
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	Yes	4	4
Hotline Support from Vendor	Yes	4	4
Newsletters	Yes	2	2
PRICING (10)			
One-time License/Purchase Price	$395	8	4
Cost for Updates	Free	2	2
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	Dec. 1983	3	2
Public Awareness/Advertisements	High	7	7
TOTAL: (100)		100	82

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT Informix		
	VENDOR Relational Database Sys.:		
	PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
SYSTEM CHARACTERISTICS (10)			
Operating System	MS-DOS	7	7
Minimum Memory Required (bytes)	128K or 256K	3	3
PROGRAM CHARACTERISTICS (10)			
Programming Language	Yes	4	4
English-like Query Language	Yes	4	4
Automatic Update & Integrity	Yes	2	2
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	Unlimited	2	2
No. of Fields per Record	2048	2	2
No. of Characters per Field	2048 bytes	2	2
No. of Characters of Index Key	118 bytes	1	1
No. of Fields per Index Key	8	1	1
No. of Index Keys per File	Unlimited	1	1
File Transfer across Drives	-----	1	0
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	Yes	2	2
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	Yes,up to8	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	Yes	3	3
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	No	2	0
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	No	4	0
On-screen Help Menu at All Levels	No	5	0
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	Yes	4	4
Hotline Support from Vendor	Yes	4	4
Newsletters	Yes	2	2
PRICING (10)			
One-time License/Purchase Price	Contact Ven	8	1
Cost for Updates	----	2	0
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	Feb. 1981	3	3
Public Awareness/Advertisements	Low	7	1
TOTAL: (100)		100	72

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT DATA	VENDOR MAXIMUM WEIGHTS	Datastore:Professional Software Connections,In PRODUCT WEIGHTS
SYSTEM CHARACTERISTICS (10)			
Operating System	PC-/MS-DOS	7	7
Minimum Memory Required (bytes)	192K	3	2
PROGRAM CHARACTERISTICS (10)			
Programming Language	No	4	0
English-like Query Language	No	4	0
Automatic Update & Integrity	Yes	2	2
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	65,000	2	2
No. of Fields per Record	512	2	2
No. of Characters per Field	80	2	1
No. of Characters of Index Key	242	1	1
No. of Fields per Index Key	9	1	1
No. of Index Keys per File	16	1	1
File Transfer across Drives	Yes	1	1
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	No	2	0
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	Yes	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	Yes	3	3
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	Yes	2	2
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	No	4	0
On-screen Help Menu at All Levels	Yes	5	5
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	Yes	4	4
Hotline Support from Vendor	Yes	4	4
Newsletters	Yes	2	2
PRICING (10)			
One-time License/Purchase Price	$495	8	4
Cost for Updates	$150	2	1
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	Nov. 1983	3	2
Public Awareness/Advertisements	Low	7	1
TOTAL: (100)		100	71

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
PRODUCT PFS:File			
VENDOR SW Publishing Corp.			
SYSTEM CHARACTERISTICS (10)			
Operating System	PC-DOS	7	7
Minimum Memory Required (bytes)	48K to 128K	3	3
PROGRAM CHARACTERISTICS (10)			
Programming Language	Yes	4	4
English-like Query Language	Yes	4	4
Automatic Update & Integrity	No	2	0
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	1000	2	1
No. of Fields per Record	Unlimited	2	2
No. of Characters per Field	3200	2	2
No. of Characters of Index Key	100	1	1
No. of Fields per Index Key	880	1	1
No. of Index Keys per File	Unlimited	1	1
File Transfer across Drives	---	1	0
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	No	2	0
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	Yes	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	No	3	0
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	---	2	0
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	No	4	0
On-screen Help Menu at All Levels	No	5	0
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	No	4	0
Hotline Support from Vendor	Yes	4	4
Newsletters	Yes	2	2
PRICING (10)			
One-time License/Purchase Price	$140	8	8
Cost for Updates	$35	2	2
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	Oct. 1980	3	3
Public Awareness/Advertisements	Moderate	7	4
TOTAL: (100)		100	72

DBMS PACKAGES (EVALUATION PROCESS 2)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT DATA	Datastore:Professional Software Connections,In	
		MAXIMUM WEIGHTS	PRODUCT WEIGHTS
SYSTEM CHARACTERISTICS (10)			
Operating System	PC-/MS-DOS	7	7
Minimum Memory Required (bytes)	192K	3	2
PROGRAM CHARACTERISTICS (10)			
Programming Language	No	4	0
English-like Query Language	No	4	0
Automatic Update & Integrity	Yes	2	2
DATABASE FILE CHARACTERISTICS (10)			
No. of Records per File	65,000	2	2
No. of Fields per Record	512	2	2
No. of Characters per Field	80	2	1
No. of Characters of Index Key	242	1	1
No. of Fields per Index Key	9	1	1
No. of Index Keys per File	16	1	1
File Transfer across Drives	Yes	1	1
DATABASE STRUCTURE CHARACTERISTICS (10)			
Add Fields	Yes	4	4
Add Records	Yes	4	4
Logical Fields	No	2	0
SORTING/INDEXING (10)			
Ascending	Yes	4	4
Descending	Yes	3	3
Indexing based on Multiple Fields	Yes	3	3
REPORT GENERATOR (10)			
Free Form Placement of Headings	Yes	3	3
Free Form Placement of Output	Yes	3	3
Output Values from Field Variables	Yes	2	2
Interactive Printer Control	Yes	2	2
DOCUMENTATION SUPPORT (10)			
On-screen Interactive Tutorial	No	4	0
On-screen Help Menu at All Levels	Yes	5	5
Audio/Video Training Aids	No	1	0
VENDOR SUPPORT (10)			
Demonstration Diskette	Yes	4	4
Hotline Support from Vendor	Yes	4	4
Newsletters	Yes	2	2
PRICING (10)			
One-time License/Purchase Price	$495	8	4
Cost for Updates	$150	2	1
INDUSTRY ACCEPTANCE (10)			
Date of First Installation	Nov. 1983	3	2
Public Awareness/Advertisements	Low	7	1
TOTAL: (100)		100	71

APPENDIX E

DBMS EVALUATION PROCESS 3 CRITERIA

DBMS EVALUATION PROCESS 3 CRITERIA

(1) SYSTEM CHARACTERISTICS (20)

  (a) Operating System (8)

    MS-DOS   (8)

  (b) Disk Copy Permitted (5)

    The DBMS with disk copy protection appears to be costly, troublesome and unfriendly, especially for non-computer personnel.

  (c) Minimum Memory Required (bytes) (7)

less than or equal to 128 K	(7)
less than or equal to 256 K	(5)
less than or equal to 512 K	(3)
greater than 512 K	(1)

(2) PROGRAM CHARACTERISTICS (40)

  (a) Programming Language Features (8)

  (b) English-like Query Language (7)

  (c) English-like Data Definition language (7)

  (d) English-like Manipulation language (6)

  (e) Language Interfaces (6)

  (f) Automatic Update and Integrity (5)

(3) DATABASE FILE CHARACTERISTICS (20)

  (a) No. of Records per File (2)

greater than or equal to 64 K	(2)
less than 64 K	(1)

  (b) No. of Fields per Record (2)

greater than 32	(2)
less than or equal to 32	(1)

(c) <u>No. of Characters per Field</u> (2)

greater than 128	(2)
less than or equal to 128	(1)

(d) <u>No. of Characters of Index Key</u> (2)

greater than 1	(2)

(e) <u>No. of Fields per Index Key</u> (2)

greater than 1	(2)

(f) <u>No. of Index Keys per File</u> (2)

greater than 1	(2)

(g) <u>Displays File Directories</u> (2)

(h) <u>Can Delete Files</u> (2)

(i) <u>Can Split Files</u> (1)

(j) <u>File Transfer across Drives</u> (1)

(4) <u>DATABASE STRUCTURE CHARACTERISTICS</u> (40)

(a) <u>Degree of Simplicity in Modifying Structure by Non-computer Person</u> (14)

simple	(14)
moderate	(10)
difficult	(4)
cannot Modify	(0)

(b) <u>No. of Hours Involved in Modifying Structure to Add/Delete/Change Data Elements Non-computer Person</u> (14)

less than 1 hour	(14)
less than 2 hours	(11)
less than 3 hours	(8)
less than 4 hours	(5)
less than 5 hours	(2)
greater than or equal to 5 hours	(0)

(c) <u>Degree of Simplicity in Modifying Structure by Computer Professional</u> (12)

Simple	(2)

```
        moderate                               (1)
        difficult                              (0)


    (d)  No. of Hours Involved in Modifying Structure to
         Add/Delete/Change Data elements by Computer
         Professional (2)

         less than 1 hour                      (2)
         less than 2 hours                     (1)
         greater than or equal to 2 hours      (0)

    (e)  Variable Length Fields (1)

         Disk can hold more data with a variable-length field
         structure.

    (f)  Variable Length Records (1)

         Disks can hold more data with a variable-length record
         structure.

    (g)  Can Compress Files (1)

         Deleted records should not cause a checker-board
         effect on files.

    (h)  Dollar Fields (2)

         Having Dollar Fields allows the user to enter data
         more easily. e.g., $9,999.99

    (i)  Date Fields (1)

         Automatic insertion of slashes to separate month, day
         and year allows the user to enter data more easily.

         e.g., 10/30/85

    (j)  Logical Fields (1)

    (k)  Places Commas in Numeric Fields (1)

         e.g., 1,000,000


(5)  DATA ENTRY CHARACTERISTICS (30)

    (a)  Checks for Duplicate Records (4)

    (b)  Checks for Ranges (4)
```

(c) <u>Displays No. of Existing Records</u> (4)

(d) <u>Menu-driven Function Selection</u> (4)

   This is one of the features that provides user-friendliness.

(e) <u>Field Protection</u> (4)

(f) <u>Provides Split Screens</u> (4)

(g) <u>Descriptive Error Messages</u> (5)

   This is one of the features that provides user-friendliness.

(6) <u>SORTING/INDEXING</u> (20)

   (a) <u>Ascending</u> (8)

   (b) <u>Descending</u> (7)

   (c) <u>Indexing based on Multiple Fields</u> (5)

(7) <u>SEARCHING/SELECTION</u> (20)

   (a) <u>Manual and Automatic Search</u> (4)

   (b) <u>Partial Key Search</u> (4)

   (c) <u>Phonetic Search</u> (3)

      This feature allows the user to search for records based on fields that sound alike. e.g., Lewis and Louis.

   (d) <u>Supports "AND" Searching</u> (3)

   (e) <u>Supports "OR" Selection</u> (3)

   (f) <u>Can Ignore Case</u> (3)

(8) <u>ADVANCED FUNCTION</u> (20)

   (a) <u>Column Totals</u> (6)

   (b) <u>Averages</u> (6)

   (c) <u>Record Totals</u> (6)

   (d) <u>Graphics Capability</u> (2)

This allows the user to use maps and pictures.

(9) <u>REPORT GENERATOR</u> (50)

    (a) <u>Can Save report Formats</u> (5)

    (b) <u>Manual and Auto Page Numbering</u> (5)

    (c) <u>Can Select Page Numbering positions</u> (5)

    (d) <u>Manual and Auto Entry of Dates</u> (5)

    (e) <u>Can Select Multiple Spacing</u> (4)

    (f) <u>Can Use Data from Multiple Files</u> (4)

    (g) <u>Can Provide Summary Reports</u> (4)

    (i) <u>Free Form Placement of Headings</u> (4)

    (j) <u>Free Form Placement of Output</u> (4)

    (k) <u>Output Values from Field Variables</u> (3)

    (l) <u>Creates Disk Files</u> (4)

    (m) <u>Interactive Printer Control</u> (3)

(10) <u>Documentation Support</u> (50)

    (a) <u>Quality of Manuals(Paper, Covers, etc.)</u> (3)

    (b) <u>Ease of Learning from Manuals</u> (12)

    (c) <u>Application samples in Manuals</u> (5)

    (d) <u>Pictorial Descriptions in Manuals</u> (2)

    (e) <u>Index in Manuals</u> (2)

    (f) <u>Glossary in Manuals</u> (2)

    (g) <u>List of Error Messages in Manuals</u> (6)

    (h) <u>On-screen Interactive Tutorial</u> (5)

    (i) <u>On-screen Help Menu at all Levels</u> (10)

    (j) <u>Reference Cards</u> (2)

(k) <u>Audio/Video Training Aids</u> (1)

(11) <u>VENDOR SUPPORT</u> (50)

   (a) <u>Demonstration Diskette</u> (12)

   (b) <u>Hotline Support from Vendor</u> (14)

   (c) <u>Vendor/Distributor/Dealer Seminars</u> (10)

   (d) <u>Vendor/Distributor/Dealer Training</u> (12)

   (e) <u>Newsletters</u> (2)

(12) <u>INDUSTRY ACCEPTANCE</u> (30)

   (a) <u>Date of First Installation</u> (8)

before or in 1981	(8)
before or in 1982	(6)
before or in 1983	(4)
before or in 1984	(1)

   (b) <u>Number of Copies Installed to Date</u> (8)

greater than 15,000	(8)
less than or equal to 15,000	(6)
less than or equal to 10,000	(4)
less than or equal to 5,000	(2)

   (c) <u>Public Awareness/Advertisements</u> (14)

high	(14)
moderate	(7)
low	(1)

(13) <u>PRICING</u> (50)

   (a) <u>One-time License/Purchase Price</u> (25)

less than $250	(25)
less than $500	(19)
less than $750	(13)
less than $1,000	(7)
greater than or equal to $1,000	(1)

   (b) <u>Quantity Discounts</u> (15)

   (c) <u>Generous Refund Policy(No. of Days)</u> (2)

Generous refund policy means that users have more options.

greater than or equal to 30 days	(2)
less than 20 days	(1)
no refund	(0)

(d) <u>Cost for Updates</u> (8)

less than $100	(8)
greater than or equal to $100	(1)

(14) <u>OVERALL PERFORMANCE</u> (60)

   (a) <u>Single Task Execution</u>   (30)

As a benchmark test, a record is searched using the same type of search key and the overall time taken for the search is compared.

fast	(30)
moderate	(15)
slow	(1)

   (b) <u>Multiple Task/Job Execution</u>   (30)

As a benchmark test, a record is deleted from the existing database file and an indexed file is updated.

The overall time taken for this job is compared.

fast	(30)
moderate	(15)
slow	(1)

APPENDIX F

DBMS PACKAGES RECOMMENDED FOR PTS-MIS (EVALUATION PROCESS 3)

DBMS PACKAGES RECOMMENDED FOR PTS-MIS (EVALUATION PROCESS 3)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT dBase II VENDOR Ashton-Tate PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
SYSTEM CHARACTERISTICS (20)			
MS-DOS Operating System	Yes	8	8
Disk Copy Permitted	Yes	5	5
Minimum Memory Required(bytes)	64k to 128k	7	7
PROGRAM CHARACTERISTICS (40)			
Programming Language Features	Yes	8	8
English-like Query Language	Yes	7	7
English-like Data Definition Lang.	Yes	7	7
English-like Manipulation Language	Yes	7	7
Language Interfaces	No	6	0
Automatic Update & Integrity	Yes	5	5
DATABASE FILE CHARACTERISTICS (20)			
No. of Records per File	65,535	2	2
No. of Fields per Record	32	2	1
No. of Characters per Field	254	2	2
No. of Characters of Index Key	100	2	2
No. of Fields per Index Key	Unlimited	2	2
No. of Index Keys per File	1 Active	2	2
Displays File Directories	Yes	2	2
Can Delete Files	Yes	2	2
Can Merge Files	Yes	2	2
Can Split Files	Yes	1	1
File Transfer across Drives	No	1	0
DATABASE STRUCTURE CHARACTERISTICS (40)			
Degree of Simplicity in Modifying Structure by Non-Computer Person	Cannot Modify	14	0
No. of Hours Involved in Modifying Structure to Add/Delete/Change Data Elements by Non-Computer Person	Less than 5 hours	14	2
Degree of Simplicity in Modifying Structure by Computer Professional	Difficult	2	0
No. of Hours Involved in Modifying Structure to Add/Delete/Change Data Elements by Computer Professional	Less than 2 hours	2	1
Variable Length Fields	No	1	0
Variable Length Records	No	1	0
Can Compress Files	Yes	1	1
Dollar Fields	No	2	0
Date Fields	No	1	0
Logical Fields	Yes	1	1
Places Commas in Numeric Fields	No	1	0

EVALUATION CRITERIA (WEIGHTS)	PRODUCT| dBase II VENDOR	Ashton-Tate PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
DATA ENTRY CHARACTERISTICS (30)			
Checks for Duplicate Records	No	4	0
Checks for Ranges	No	4	0
Displays No. of Existing Records	Yes	4	4
Menu-driven Function Selection	No	4	0
Field Protection	Yes	5	5
Provides Split Screens	No	4	0
Descriptive Error Messages	No	5	0
SORTING/INDEXING (20)			
Ascending	Yes	8	8
Descending	Yes	7	7
Indexing based on Multiple Fields	Yes	5	5
SEARCHING/SELECTION (20)			
Manual and Automatic Search	Yes	4	4
Partial Key Search	Yes	4	4
Phonetic Search	No	3	0
Supports "AND" Searching	Yes	3	3
Supports "OR" Selection	Yes	3	3
Can Ignore Case	Yes	3	2
ADVANCED FUNCTIONS (20)			
Column Totals	Yes	6	6
Averages	Yes	6	6
Record Totals	Yes	6	6
Graphics Capability	No	2	0
REPORT GENERATOR (50)			
Can Save Report Formats	Yes	5	5
Manual and Auto Page Numbering	Auto only	5	2
Can Select Page Numbering Positions	No	5	0
Manual and Auto Entry of Dates	Auto only	5	2
Can Select Multiple Spacing	Yes	4	4
Can Use Data from Multiple Files	Yes	4	4
Can Provide Summary Reports	Yes	4	4
Free Form Placement of Headings	Yes	4	4
Free Form Placement of Output	Yes	4	4
Output Values from Field Variables	Yes	3	3
Creates Disk Files	Yes	4	4
Interactive Printer Control	Yes	3	3

EVALUATION CRITERIA (WEIGHTS)	PRODUCT| dBase II VENDOR	Ashton-Tate PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
DOCUMENTATION SUPPORT (50)			
Quality of Manuals(Paper, Covers)	Poor	3	1
Ease of Learning from Manuals	Difficult	12	4
Application Samples in Manuals	Yes	5	5
Pictorial Descriptions in Manuals	No	2	0
Index in Manuals	Yes	2	2
Glossary in Manuals	Yes	2	2
List of Error Messages in Manuals	Yes	6	6
On-screen Interactive Tutorial	Yes	5	5
On-screen Help Menu at All Levels	Yes	10	10
Reference Cards	Yes	2	2
Audio/Video Cassette Training	No	1	0
VENDOR SUPPORT (50)			
Demonstration Diskette	Yes	12	12
Hotline Support from Vendor	Yes	14	14
Vendor/Distributor/Dealer Seminars	No	10	0
Vendor/Distributor/Dealer Training	No	12	0
Newsletters	Yes	2	2
INDUSTRY ACCEPTANCE (30)			
Date of First Installation	1981	8	8
Number of Copies Installed to Date	280,000	8	8
Public Awareness/Advertisements	High	14	14
PRICING (50)			
One-time License/Purchase Price	$495	25	19
Quantity Discounts	No	15	0
Generous Refund Policy(No. of Days)	No	2	0
Cost for Updates	Estimated	8	1
OVERALL PERFORMANCE (60)			
Single Task Execution	Slow	30	1
Multiple Task/Job Execution	Slow	30	1
TOTAL: (500)		500	296

DBMS PACKAGES RECOMMENDED FOR PTS-MIS (EVALUATION PROCESS 3)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
PRODUCT dBase III			
VENDOR Ashton-Tate			
SYSTEM CHARACTERISTICS (20)			
MS-DOS Operating System	Yes	8	8
Disk Copy Permitted	No	5	0
Minimum Memory Required(bytes)	256k	7	5
PROGRAM CHARACTERISTICS (40)			
Programming Language Features	Yes	8	8
English-like Query Language	Yes	7	7
English-like Data Definition Lang.	Yes	7	7
English-like Manipulation Language	Yes	7	7
Language Interfaces	No	6	0
Automatic Update & Integrity	Yes	5	5
DATABASE FILE CHARACTERISTICS (20)			
No. of Records per File	Up to 1 bill	2	2
No. of Fields per Record	128	2	2
No. of Characters per Field	254	2	2
No. of Characters of Index Key	100	2	2
No. of Fields per Index Key	Unlimited	2	2
No. of Index Keys per File	7 Active	2	2
Displays File Directories	Yes	2	2
Can Delete Files	Yes	2	2
Can Merge Files	Yes	2	2
Can Split Files	Yes	1	1
File Transfer across Drives	Yes	1	1
DATABASE STRUCTURE CHARACTERISTICS (40)			
Degree of Simplicity in Modifying Structure by Non-Computer Person	Moderate	14	10
No. of Hours Involved in Modifying Structure to Add/Delete/Change Data Elements by Non-Computer Person	Less than 2 hours	14	11
Degree of Simplicity in Modifying Structure by Computer Professional	Simple	2	2
No. of Hours Involved in Modifying Structure to Add/Delete/Change Data Elements by Computer Professional	Less than 1 hour	2	2
Variable Length Fields	No	1	0
Variable Length Records	No	1	0
Can Compress Files	Yes	1	1
Dollar Fields	No	2	0
Date Fields	Yes	1	1
Logical Fields	Yes	1	1
Places Commas in Numeric Fields	No	1	0

EVALUATION CRITERIA (WEIGHTS)	PRODUCT VENDOR PRODUCT DATA	dBase III Ashton-Tate MAXIMUM WEIGHTS	PRODUCT WEIGHTS
DATA ENTRY CHARACTERISTICS (30)			
Checks for Duplicate Records	No	4	0
Checks for Ranges	No	4	0
Displays No. of Existing Records	Yes	4	4
Menu-driven Function Selection	Yes	4	4
Field Protection	Yes	5	5
Provides Split Screens	No	4	0
Descriptive Error Messages	Yes	5	5
SORTING/INDEXING (20)			
Ascending	Yes	8	8
Descending	Yes	7	7
Indexing based on Multiple Fields	Yes	5	5
SEARCHING/SELECTION (20)			
Manual and Automatic Search	Yes	4	4
Partial Key Search	Yes	4	4
Phonetic Search	No	3	0
Supports "AND" Searching	Yes	3	3
Supports "OR" Selection	Yes	3	3
Can Ignore Case	Yes	3	2
ADVANCED FUNCTIONS (20)			
Column Totals	Yes	6	6
Averages	Yes	6	6
Record Totals	Yes	6	6
Graphics Capability	No	2	0
REPORT GENERATOR (50)			
Can Save Report Formats	Yes	5	0
Manual and Auto Page Numbering	Auto only	5	2
Can Select Page Numbering Positions	No	5	0
Manual and Auto Entry of Dates	Auto only	5	2
Can Select Multiple Spacing	Yes	4	4
Can Use Data from Multiple Files	Yes	4	4
Can Provide Summary Reports	Yes	4	4
Free Form Placement of Headings	Yes	4	4
Free Form Placement of Output	Yes	4	4
Output Values from Field Variables	Yes	3	3
Creates Disk Files	Yes	4	4
Interactive Printer Control	Yes	3	3

EVALUATION CRITERIA (WEIGHTS)	PRODUCT dBase III VENDOR Ashton-Tate		
	PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
DOCUMENTATION SUPPORT (50)			
Quality of Manuals(Paper, Covers)	Good	3	3
Ease of Learning from Manuals	Moderate	12	8
Application Samples in Manuals	Yes	5	5
Pictorial Descriptions in Manuals	No	2	0
Index in Manuals	Yes	2	2
Glossary in Manuals	Yes	2	2
List of Error Messages in Manuals	Yes	6	6
On-screen Interactive Tutorial	No	5	0
On-screen Help Menu at All Levels	Yes	10	10
Reference Cards	Yes	2	2
Audio/Video Cassette Training	No	1	0
VENDOR SUPPORT (50)			
Demonstration Diskette	No	12	0
Hotline Support from Vendor	Yes	14	14
Vendor/Distributor/Dealer Seminars	Yes	10	10
Vendor/Distributor/Dealer Training	Yes	12	12
Newsletters	Yes	2	2
INDUSTRY ACCEPTANCE (30)			
Date of First Installation	June 1984	8	1
Number of Copies Installed to Date	Estimated	8	8
Public Awareness/Advertisements	High	14	14
PRICING (50)			
One-time License/Purchase Price	$695	25	13
Quantity Discounts	Yes	15	15
Generous Refund Policy(No. of Days)	Yes	2	2
Cost for Updates	Estimated	8	8
OVERALL PERFORMANCE (60)			
Single Task Execution	Fast	30	30
Multiple Task/Job Execution	Fast	30	30
TOTAL: (500)		500	398

DBMS PACKAGES RECOMMENDED FOR PTS-MIS (EVALUATION PROCESS 3)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT Condor 3 VENDOR Condor Comp. Corp. PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
SYSTEM CHARACTERISTICS (20)			
MS-DOS Operating System	Yes	8	8
Disk Copy Permitted	Yes	5	5
Minimum Memory Required(bytes)	64k or 80k	7	7
PROGRAM CHARACTERISTICS (40)			
Programming Language Features	No	8	0
English-like Query Language	Yes	7	7
English-like Data Definition Lang.	Yes	7	7
English-like Manipulation Language	Yes	7	7
Language Interfaces	Yes, 6	6	7
Automatic Update & Integrity	Yes	5	5
DATABASE FILE CHARACTERISTICS (20)			
No. of Records per File	65,534	2	2
No. of Fields per Record	127	2	2
No. of Characters per Field	127	2	1
No. of Characters of Index Key	127	2	2
No. of Fields per Index Key	8	2	2
No. of Index Keys per File	1	2	2
Displays File Directories	Yes	2	2
Can Delete Files	Yes	2	2
Can Merge Files	Yes	2	2
Can Split Files	Yes	1	1
File Transfer across Drives	Yes	1	1
DATABASE STRUCTURE CHARACTERISTICS (40)			
Degree of Simplicity in Modifying Structure by Non-Computer Person	Moderate	14	10
No. of Hours Involved in Modifying Structure to Add/Delete/Change Data Elements by Non-Computer Person	Less than 2 hours	14	11
Degree of Simplicity in Modifying Structure by Computer Professional	Moderate	2	2
No. of Hours Involved in Modifying Structure to Add/Delete/Change Data Elements by Computer Professional	Less than 1 hour	2	2
Variable Length Fields	Yes	1	1
Variable Length Records	Yes	1	1
Can Compress Files	Yes	1	1
Dollar Fields	Yes	2	2
Date Fields	Yes	1	1
Logical Fields	No	1	0
Places Commas in Numeric Fields	No	1	0

EVALUATION CRITERIA (WEIGHTS)	PRODUCT VENDOR PRODUCT DATA	Condor 3 Condor Comp. Corp. MAXIMUM WEIGHTS	PRODUCT WEIGHTS
DATA ENTRY CHARACTERISTICS (30)			
Checks for Duplicate Records	No	4	0
Checks for Ranges	Yes	4	4
Displays No. of Existing Records	Yes	4	4
Menu-driven Function Selection	Yes	4	4
Field Protection	Yes	5	5
Provides Split Screens	No	4	0
Descriptive Error Messages	Yes	5	5
SORTING/INDEXING (20)			
Ascending	Yes	8	8
Descending	Yes	7	7
Indexing based on Multiple Fields	Yes	5	5
SEARCHING/SELECTION (20)			
Manual and Automatic Search	Yes	4	4
Partial Key Search	Yes	4	4
Phonetic Search	No	3	0
Supports "AND" Searching	Yes	3	3
Supports "OR" Selection	Yes	3	3
Can Ignore Case	Yes	3	3
ADVANCED FUNCTIONS (20)			
Column Totals	Yes	6	6
Averages	Yes	6	6
Record Totals	Yes	6	6
Graphics Capability	Yes	2	2
REPORT GENERATOR (50)			
Can Save Report Formats	Yes	5	5
Manual and Auto Page Numbering	Yes	5	5
Can Select Page Numbering Positions	Yes	5	5
Manual and Auto Entry of Dates	Yes	5	5
Can Select Multiple Spacing	Yes	4	4
Can Use Data from Multiple Files	No	4	0
Can Provide Summary Reports	Yes	4	4
Free Form Placement of Headings	Yes	4	4
Free Form Placement of Output	Yes	4	4
Output Values from Field Variables	Yes	3	3
Creates Disk Files	Yes	4	4
Interactive Printer Control	Yes	3	3

EVALUATION CRITERIA (WEIGHTS)	PRODUCT VENDOR PRODUCT DATA	Condor 3 Condor Comp. Corp. MAXIMUM WEIGHTS	PRODUCT WEIGHTS
DOCUMENTATION SUPPORT (50)			
Quality of Manuals(Paper, Covers)	Good	3	3
Ease of Learning from Manuals	Simple	12	12
Application Samples in Manuals	Yes	5	5
Pictorial Descriptions in Manuals	Yes	2	2
Index in Manuals	Yes	2	2
Glossary in Manuals	Yes	2	2
List of Error Messages in Manuals	Yes	6	6
On-screen Interactive Tutorial	Yes	5	5
On-screen Help Menu at All Levels	Yes	10	10
Reference Cards	Yes	2	2
Audio/Video Cassette Training	No	1	0
VENDOR SUPPORT (50)			
Demonstration Diskette	Yes	12	12
Hotline Support from Vendor	Yes	14	14
Vendor/Distributor/Dealer Seminars	No	10	0
Vendor/Distributor/Dealer Training	No	12	0
Newsletters	Yes	2	2
INDUSTRY ACCEPTANCE (30)			
Date of First Installation	May 1977	8	8
Number of Copies Installed to Date	160,000	8	8
Public Awareness/Advertisements	Moderate	14	7
PRICING (50)			
One-time License/Purchase Price	$650	25	13
Quantity Discounts	No	15	0
Generous Refund Policy(No. of Days)	No	2	0
Cost for Updates	$85	8	8
OVERALL PERFORMANCE (60)			
Single Task Execution	Fast	30	30
Multiple Task/Job Execution	Fast	30	30
TOTAL: (500)		500	406

DBMS PACKAGES RECOMMENDED FOR PTS-MIS (EVALUATION PROCESS 3)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT VENDOR PRODUCT DATA	Probase Data Tech. Industries MAXIMUM WEIGHTS	PRODUCT WEIGHTS
SYSTEM CHARACTERISTICS (20)			
MS-DOS Operating System	Yes	8	8
Disk Copy Permitted	Yes	5	5
Minimum Memory Required(bytes)	192k	7	5
PROGRAM CHARACTERISTICS (40)			
Programming Language Features	Yes	8	8
English-like Query Language	Yes	7	7
English-like Data Definition Lang.	Yes	7	7
English-like Manipulation Language	Yes	7	7
Language Interfaces	Yes	6	6
Automatic Update & Integrity	Yes	5	5
DATABASE FILE CHARACTERISTICS (20)			
No. of Records per File	65,536	2	2
No. of Fields per Record	64	2	2
No. of Characters per Field	64	2	1
No. of Characters of Index Key	64	2	2
No. of Fields per Index Key	4	2	2
No. of Index Keys per File	10	2	2
Displays File Directories	Yes	2	2
Can Delete Files	Yes	2	2
Can Merge Files	Yes	2	2
Can Split Files	Yes	1	1
File Transfer across Drives	Yes	1	1
DATABASE STRUCTURE CHARACTERISTICS (40)			
Degree of Simplicity in Modifying Structure by Non-Computer Person	Moderate	14	10
No. of Hours Involved in Modifying Structure to Add/Delete/Change Data Elements by Non-Computer Person	Less than 1 hour	14	14
Degree of Simplicity in Modifying Structure by Computer Professional	Simple	2	2
No. of Hours Involved in Modifying Structure to Add/Delete/Change Data Elements by Computer Professional	Less than 1 hour	2	2
Variable Length Fields	No	1	0
Variable Length Records	No	1	0
Can Compress Files	Yes	1	1
Dollar Fields	No	2	0
Date Fields	No	1	0
Logical Fields	No	1	0
Places Commas in Numeric Fields	Yes	1	1

EVALUATION CRITERIA (WEIGHTS)	PRODUCT VENDOR PRODUCT DATA	Probase Data Tech. Industries	
		MAXIMUM WEIGHTS	PRODUCT WEIGHTS
DATA ENTRY CHARACTERISTICS (30)			
Checks for Duplicate Records	No	4	0
Checks for Ranges	No	4	0
Displays No. of Existing Records	Yes	4	4
Menu-driven Function Selection	Yes	4	4
Field Protection	Yes	5	5
Provides Split Screens	No	4	0
Descriptive Error Messages	Yes	5	5
SORTING/INDEXING (20)			
Ascending	Yes	8	8
Descending	Yes	7	7
Indexing based on Multiple Fields	Yes	5	5
SEARCHING/SELECTION (20)			
Manual and Automatic Search	Yes	4	4
Partial Key Search	Yes	4	4
Phonetic Search	No	3	0
Supports "AND" Searching	Yes	3	3
Supports "OR" Selection	Yes	3	3
Can Ignore Case	No	3	0
ADVANCED FUNCTIONS (20)			
Column Totals	Yes	6	6
Averages	Yes	6	6
Record Totals	Yes	6	6
Graphics Capability	No	2	0
REPORT GENERATOR (50)			
Can Save Report Formats	Yes	5	5
Manual and Auto Page Numbering	Yes	5	5
Can Select Page Numbering Positions	Yes	5	5
Manual and Auto Entry of Dates	Yes	5	5
Can Select Multiple Spacing	Yes	4	4
Can Use Data from Multiple Files	Yes	4	4
Can Provide Summary Reports	Yes	4	4
Free Form Placement of Headings	Yes	4	4
Free Form Placement of Output	Yes	4	4
Output Values from Field Variables	Yes	3	3
Creates Disk Files	Yes	4	4
Interactive Printer Control	Yes	3	3

EVALUATION CRITERIA (WEIGHTS)	PRODUCT VENDOR PRODUCT DATA	Probase Data Tech. Industries MAXIMUM WEIGHTS	PRODUCT WEIGHTS
DOCUMENTATION SUPPORT (50)			
Quality of Manuals(Paper, Covers)	Good	3	3
Ease of Learning from Manuals	Moderate	12	8
Application Samples in Manuals	Yes	5	5
Pictorial Descriptions in Manuals	Yes	2	2
Index in Manuals	Yes	2	2
Glossary in Manuals	No	2	0
List of Error Messages in Manuals	Yes	6	6
On-screen Interactive Tutorial	Yes	5	5
On-screen Help Menu at All Levels	Yes	10	10
Reference Cards	No	2	0
Audio/Video Cassette Training	No	1	0
VENDOR SUPPORT (50)			
Demonstration Diskette	Yes	12	12
Hotline Support from Vendor	Yes	14	14
Vendor/Distributor/Dealer Seminars	No	10	0
Vendor/Distributor/Dealer Training	No	12	0
Newsletters	No	2	0
INDUSTRY ACCEPTANCE (30)			
Date of First Installation	Sept. 1982	8	6
Number of Copies Installed to Date	12,000	8	6
Public Awareness/Advertisements	Low	14	1
PRICING (50)			
One-time License/Purchase Price	$650	25	13
Quantity Discounts	No	15	0
Generous Refund Policy(No. of Days)	No	2	0
Cost for Updates	Estimated	8	1
OVERALL PERFORMANCE (60)			
Single Task Execution	Fast	30	30
Multiple Task/Job Execution	Fast	30	30
TOTAL: (500)		500	381

DBMS PACKAGES RECOMMENDED FOR PTS-MIS (EVALUATION PROCESS 3)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
	PRODUCT: R:base Series 5000		
	VENDOR: Microrim, Inc.		
SYSTEM CHARACTERISTICS (20)			
MS-DOS Operating System	Yes	8	8
Disk Copy Permitted	No	5	0
Minimum Memory Required(bytes)	256k	7	5
PROGRAM CHARACTERISTICS (40)			
Programming Language Features	Yes	8	8
English-like Query Language	Yes	7	7
English-like Data Definition Lang.	Yes	7	7
English-like Manipulation Language	Yes	7	7
Language Interfaces	Yes	6	6
Automatic Update & Integrity	Yes	5	5
DATABASE FILE CHARACTERISTICS (20)			
No. of Records per File	Up to 5 bill	2	2
No. of Fields per Record	400	2	2
No. of Characters per Field	1530	2	2
No. of Characters of Index Key	1530	2	2
No. of Fields per Index Key	1	2	2
No. of Index Keys per File	400	2	2
Displays File Directories	Yes	2	2
Can Delete Files	Yes	2	2
Can Merge Files	Yes	2	2
Can Split Files	Yes	1	2
File Transfer across Drives	No	1	0
DATABASE STRUCTURE CHARACTERISTICS (40)			
Degree of Simplicity in Modifying Structure by Non-Computer Person	Simple	14	14
No. of Hours Involved in Modifying Structure to Add/Delete/Change Data Elements by Non-Computer Person	Less than 1 hour	14	14
Degree of Simplicity in Modifying Structure by Computer Professional	Simple	2	2
No. of Hours Involved in Modifying Structure to Add/Delete/Change Data Elements by Computer Professional	Less than 1 hour	2	2
Variable Length Fields	No	1	0
Variable Length Records	No	1	0
Can Compress Files	Yes	1	1
Dollar Fields	Yes	2	2
Date Fields	Yes	1	1
Logical Fields	No	1	0
Places Commas in Numeric Fields	No	1	0

EVALUATION CRITERIA (WEIGHTS)	PRODUCT VENDOR	R:base Series 5000 Microrim, Inc.	
	PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
DATA ENTRY CHARACTERISTICS (30)			
Checks for Duplicate Records	w/Command	4	2
Checks for Ranges	No	4	0
Displays No. of Existing Records	Yes	4	4
Menu-driven Function Selection	Yes	4	4
Field Protection	Yes	5	5
Provides Split Screens	Yes	4	4
Descriptive Error Messages	Yes	5	5
SORTING/INDEXING (20)			
Ascending	Yes	8	8
Descending	Yes	7	7
Indexing based on Multiple Fields	Yes	5	5
SEARCHING/SELECTION (20)			
Manual and Automatic Search	Yes	4	4
Partial Key Search	Yes	4	4
Phonetic Search	No	3	0
Supports "AND" Searching	Yes	3	3
Supports "OR" Selection	Yes	3	3
Can Ignore Case	Yes	3	3
ADVANCED FUNCTIONS (20)			
Column Totals	Yes	6	6
Averages	Yes	6	6
Record Totals	Yes	6	6
Graphics Capability	No	2	0
REPORT GENERATOR (50)			
Can Save Report Formats	Yes	5	5
Manual and Auto Page Numbering	Yes	5	5
Can Select Page Numbering Positions	Yes	5	5
Manual and Auto Entry of Dates	Yes	5	5
Can Select Multiple Spacing	Yes	4	4
Can Use Data from Multiple Files	Yes	4	4
Can Provide Summary Reports	Yes	4	4
Free Form Placement of Headings	Yes	4	4
Free Form Placement of Output	Yes	4	4
Output Values from Field Variables	Yes	3	3
Creates Disk Files	Yes	4	4
Interactive Printer Control	No	3	0

EVALUATION CRITERIA (WEIGHTS)	PRODUCT R:base Series 5000 VENDOR Microrim, Inc. PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
DOCUMENTATION SUPPORT (50)			
Quality of Manuals(Paper, Covers)	Good	3	3
Ease of Learning from Manuals	Simple	12	12
Application Samples in Manuals	Yes	5	5
Pictorial Descriptions in Manuals	Yes	2	2
Index in Manuals	Yes	2	2
Glossary in Manuals	Yes	2	2
List of Error Messages in Manuals	Yes	6	6
On-screen Interactive Tutorial	Yes	5	5
On-screen Help Menu at All Levels	Yes	10	10
Reference Cards	Yes	2	2
Audio/Video Cassette Training	No	1	0
VENDOR SUPPORT (50)			
Demonstration Diskette	Yes	12	12
Hotline Support from Vendor	Yes	14	14
Vendor/Distributor/Dealer Seminars	Yes	10	10
Vendor/Distributor/Dealer Training	Yes	12	12
Newsletters	No	2	0
INDUSTRY ACCEPTANCE (30)			
Date of First Installation	May 1985	8	0
Number of Copies Installed to Date	Estimated	8	4
Public Awareness/Advertisements	High	14	14
PRICING (50)			
One-time License/Purchase Price	$700	25	13
Quantity Discounts	Yes	15	15
Generous Refund Policy(No. of Days)	Yes	2	2
Cost for Updates	Estimated	8	1
OVERALL PERFORMANCE (60)			
Single Task Execution	Fast	30	30
Multiple Task/Job Execution	Fast	30	30
TOTAL: (500)		500	438

DBMS PACKAGES RECOMMENDED FOR PTS-MIS (EVALUATION PROCESS 3)

EVALUATION CRITERIA (WEIGHTS)	PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
PRODUCT Power-base **VENDOR** PowerBase Sys., Inc.			
SYSTEM CHARACTERISTICS (20)			
MS-DOS Operating System	Yes	8	8
Disk Copy Permitted	No	5	0
Minimum Memory Required(bytes)	256k	7	5
PROGRAM CHARACTERISTICS (40)			
Programming Language Features	No	8	0
English-like Query Language	Yes	7	7
English-like Data Definition Lang.	Yes	7	7
English-like Manipulation Language	Yes	7	7
Language Interfaces	No	6	0
Automatic Update & Integrity	Yes	5	5
DATABASE FILE CHARACTERISTICS (20)			
No. of Records per File	65,534	2	2
No. of Fields per Record	64	2	2
No. of Characters per Field	80	2	1
No. of Characters of Index Key	20	2	2
No. of Fields per Index Key	1	2	2
No. of Index Keys per File	6	2	2
Displays File Directories	Yes	2	2
Can Delete Files	Yes	2	2
Can Merge Files	Yes	2	2
Can Split Files	Yes	1	1
File Transfer across Drives	Yes	1	1
DATABASE STRUCTURE CHARACTERISTICS (40)			
Degree of Simplicity in Modifying Structure by Non-Computer Person	Moderate	14	10
No. of Hours Involved in Modifying Structure to Add/Delete/Change Data Elements by Non-Computer Person	Less than 2 hours	14	11
Degree of Simplicity in Modifying Structure by Computer Professional	Simple	2	2
No. of Hours Involved in Modifying Structure to Add/Delete/Change Data Elements by Computer Professional	Less than 1 hour	2	2
Variable Length Fields	No	1	0
Variable Length Records	No	1	0
Can Compress Files	Yes	1	1
Dollar Fields	Yes	2	2
Date Fields	Yes	1	1
Logical Fields	Yes	1	1
Places Commas in Numeric Fields	No	1	0

EVALUATION CRITERIA (WEIGHTS)	PRODUCT VENDOR PRODUCT DATA	Power-base PowerBase Sys., Inc. MAXIMUM WEIGHTS	PRODUCT WEIGHTS
DATA ENTRY CHARACTERISTICS (30)			
Checks for Duplicate Records	No	4	0
Checks for Ranges	Yes	4	4
Displays No. of Existing Records	Yes	4	4
Menu-driven Function Selection	Yes	4	4
Field Protection	Yes	5	5
Provides Split Screens	No	4	0
Descriptive Error Messages	Yes	5	5
SORTING/INDEXING (20)			
Ascending	Yes	8	8
Descending	Yes	7	7
Indexing based on Multiple Fields	Yes	5	5
SEARCHING/SELECTION (20)			
Manual and Automatic Search	Yes	4	4
Partial Key Search	Yes	4	4
Phonetic Search	No	3	0
Supports "AND" Searching	Yes	3	3
Supports "OR" Selection	Yes	3	3
Can Ignore Case	Yes	3	3
ADVANCED FUNCTIONS (20)			
Column Totals	Yes	6	6
Averages	Yes	6	6
Record Totals	Yes	6	6
Graphics Capability	No	2	0
REPORT GENERATOR (50)			
Can Save Report Formats	Yes	5	5
Manual and Auto Page Numbering	Yes	5	5
Can Select Page Numbering Positions	Yes	5	5
Manual and Auto Entry of Dates	Yes	5	5
Can Select Multiple Spacing	No	4	0
Can Use Data from Multiple Files	Yes	4	4
Can Provide Summary Reports	Yes	4	4
Free Form Placement of Headings	Yes	4	4
Free Form Placement of Output	No	4	0
Output Values from Field Variables	Yes	3	3
Creates Disk Files	Yes	4	4
Interactive Printer Control	No	3	0

EVALUATION CRITERIA (WEIGHTS)	PRODUCT Power-base VENDOR PowerBase Sys., Inc. PRODUCT DATA	MAXIMUM WEIGHTS	PRODUCT WEIGHTS
DOCUMENTATION SUPPORT (50)			
Quality of Manuals(Paper, Covers)	Good	3	3
Ease of Learning from Manuals	Moderate	12	8
Application Samples in Manuals	Yes	5	5
Pictorial Descriptions in Manuals	Yes	2	2
Index in Manuals	Yes	2	2
Glossary in Manuals	Yes	2	2
List of Error Messages in Manuals	Yes	6	6
On-screen Interactive Tutorial	Yes	5	5
On-screen Help Menu at All Levels	Yes	10	10
Reference Cards	Yes	2	2
Audio/Video Cassette Training	No	1	0
VENDOR SUPPORT (50)			
Demonstration Diskette	Yes	12	12
Hotline Support from Vendor	Yes	14	14
Vendor/Distributor/Dealer Seminars	No	10	0
Vendor/Distributor/Dealer Training	No	12	0
Newsletters	Yes	2	2
INDUSTRY ACCEPTANCE (30)			
Date of First Installation	Dec. 1983	8	4
Number of Copies Installed to Date	6000	8	4
Public Awareness/Advertisements	Low	14	1
PRICING (50)			
One-time License/Purchase Price	$349	25	19
Quantity Discounts	No	15	0
Generous Refund Policy(No. of Days)	No	2	0
Cost for Updates	Free-1 yr.	8	8
OVERALL PERFORMANCE (60)			
Single Task Execution	Fast	30	30
Multiple Task/Job Execution	Fast	30	30
TOTAL: (500)		500	374

APPENDIX G

LIST OF POPULAR COMPATIBLE COMPUTERS

LIST OF POPULAR COMPATIBLE COMPUTERS

COMPUTER MODEL VENDOR INFORMATION	TYPE	NO. OF DRIVES	PRICE (1 Basic System + CRT)

PC 6300
  AT&T Information Systems, Inc.
  1 Speedwell Ave.
  Morristown, NJ 07960
    Tel: 201-898-8000
	Diskette
	Based
		Up to 2	$5,095
			1 Floppy, 10
			MB Hard Disk

Deskpro
  Compaq Computer Corpration
  20555 FM 149
  Houston, TX 77070
    Tel: 713-370-7040
	Diskette
	Based
		Up to 2	$4,995
			1 Floppy, 10
			MB Hard Disk

Portable
  Compaq Computer Corpration
  20555 FM 149
  Houston, TX 77070
    Tel: 713-370-7040
	Diskette
	Based
		Up to 2	$2,495
			2 Floppy

Personal Computer (PC)
  IBM Corporation
  Old Orchard Road
  Armonk, NY 10504
    Tel: Call Local IBM Rep.
	Diskette
	Based
		Up to 2	$2,820
			2 Floppy

Personal Computer (XT)
  IBM Corporation
  Old Orchard Road
  Armonk, NY 10504
    Tel: Call Local IBM Rep.
	Hard &
	Diskette
	Based
		Up to 2	$4,918
			10 MB Hard
			Disk, 1
			Floppy

Personal Computer (AT)
  IBM Corporation
  Old Orchard Road
  Armonk, NY 10504
    Tel: Call Local IBM Rep.
	Hard &
	Diskette
	Based
		Up to 2	$6,719
			20 MB Hard
			Disk, 1
			1.2M HC

Personal Computer Portable
  IBM Corporation
  Old Orchard Road
  Armonk, NY 10504
    Tel: Call Local IBM Rep.
	Diskette
	Based
		Up to 2	$2,250
			2 Floppy

LIST OF POPULAR COMPATIBLE COMPUTERS

COMPUTER MODEL VENDOR INFORMATION	TYPE	NO. OF DRIVES	PRICE (1 Basic System + CRT)

Tandy 1200
  Tandy Corporation
  1500 One Tandy Center
  Fort Worth, TX 76102
    Tel: 817-390-3700
	Diskette
	Based
		Up tp 2	$2,999
			10MB Hard,
			1 Floppy

Tandy 1000
  Tandy Corporation
  1500 One Tandy Center
  Fort Worth, TX 76102
    Tel: 817-390-3700
	Diskette
	Based
		Up tp 2	$1,199
			1 Floppy

Kaypro 16
  Kaypro Corporation
  533 Stevens Avenue
  Solana Beach, CA 92075
    Tel: 619-481-4300
	Diskette
	Based
		Up tp 2	$3,295
			10MB Hard,
			1 Floppy

HP Touchscreen II
  Hewlett-Packard Company
  3000 Hanover Streead
  Palo Alto, CA 94304
    Tel: 415-857-1501
	Diskette
	Based
	(31/2")
		Up tp 2	$3,545
			2 Floppy

Z-150
  Zenith Data Systems
  1000 Milwaukee Avenue
  Glenview, IL 60025
    Tel: 312-391-7000
	Diskette
	Based
		Up to 2	$2,595
			2 Floppy

Portable PC
  Corona Data Systems, Inc.
  275 E. Hillcrest Drive
  Thousand Oaks, CA 91360
    Tel: 805-495-5800
	Diskette
	Based
		Up to 2	$2,595
			2 Floppy

SURVEY OF OFF-THE-SHELF PTS SOFTWARE RUN ON PERSONAL COMPUTERS

ST	AGENCY & CONTACT PERSON	RESPONSE	PTS-MIS SOFTWARE
AL	Lieutenant Billy Henderson Planning & Research Unit P.O. Box 1511 Montgomery, AL 36192 Tel. (205)-261-4447	via Phone (with Chuck Seraboff of CISCO,Inc.)	TIES by CISCO, Inc. Pasadena, MD
AK	Major M. Korhomen Administrative Services & Records Identification Alaska State Troopers P.O. Box 6188 Annex Tel. (907)-269-5646	via Phone	None
AZ	David A. Edwards, Manager Operations & Management Analysis Unit Department of Public Safety P.O. Box 6638 Phoenix, AZ 85005 Tel. (602)-262-8082	via Mail	None (custom design using Lotus 1,2,3)
AR	Sergeant Bill Young Educational Services State Police Division P.O. Box 5901 Little Rock, AR 72215 Tel. (501)-224-2882	via Phone and Mail (with Jim Tudor)	None
CA	John T. Voss, Chief Planning & Analysis Division California Highway Patrol 2555 First Avenue Sacramento, CA 95818 Tel. (916)-445-6181	via Phone (with Bob Metzger)	None

ST	AGENCY & CONTACT PERSON	RESPONSE	PTS-MIS SOFTWARE
CO	Sergeant Mikita Colorado State Patrol 4201 East Arkansas Denver, CO 80222 Tel. (303)-757-9636	via Phone (with Bob Kold)	None
CT	Ms. Juanita Hall State Police Headquarters Hartford, CT 06115 Tel. (203)-566-5930	via Phone	None
DE	H.A. Colvin, Director Planning and Development Delaware State Police P.O. Box 430 Dover, DE 19903 Tel. (302)-736-5969	via Mail	None
FL	Mary Anne Sherman Assistant to Director Florida Highway Patrol Neil Kirkman Building Tallahassee, Fl 32301 Tel. (904)-488-6673	via Phone (with Chuck Seraboff of CISCO,Inc.)	TIES by CISCO, Inc. Pasadena, MD
GA	Sergeant Larry E. Miller Planning Section Georgia State Patrol P.O. Box 1456 Atlanta, GA 30371 Tel. (404)-656-6104	via Phone (with Captain Hyde)	None
HI	Lawrence K. Hao Administrator Motor Vehicle Safety Honolulu, Hawaii Tel. (808)-548-5756	via Phone	None

ST	AGENCY & CONTACT PERSON	RESPONSE	PTS-MIS SOFTWARE
ID	Sergeant Ronald L. Moore Planning & Statistics Idaho State Police P.O. Box 55 Boise, ID 83707 Tel. (208)-334-3850	via Phone (with Chuck Payton)	None
IL	Richard A. Raub, Chief Bureau of Planning & Analysis Department of State Police 302 Armory Building Springfield, IL 62706 Tel. (217)-782-5227	via Mail	None
IN	Lieutenant Jay M. Stephens Planning Section Indiana State Police Room 319 100 North Senate Avenue Indianopolis, IN 46204 Tel. (317)-232-8254	via Phone (with Chuck Seraboff of CISCO,Inc.)	TIES by CISCO, Inc. Pasadena, MD

IA	J. Michael Laski, Director
	Research & Development
	  Bureau
	Department of Public Safety
	Wallace State Office
	  Building
	Des Moines, IA 50319
	Tel. (515)-281-8349
		via Phone
		(with Chuck
		Seraboff of
		CISCO,Inc.)
			TIES by CISCO, Inc.
			Pasadena, MD

KS	Captain Donald L. Pickert Planning and Research Kansas Highway Patrol 122 South West 7th Street Topeka, KS 66603 Tel. (913)-232-9200	via Phone (with Chuck Seraboff of CISCO,Inc.)	TIES by CISCO, Inc. Pasadena, MD

ST	AGENCY & CONTACT PERSON	RESPONSE	PTS-MIS SOFTWARE
KY	Captain Tommy C. Fields Research & Development Section Kentucky State Police 919 Versailles Road Frankfurt, KY 40601	via Phone (with Chuck Seraboff of CISCO,Inc.)	TIES by CISCO,Inc. Pasadena, MD
LA	Lieutenant A. Achord Research Louisiana State Police P.O. Box 66614 Baton Rouge, LA 70896 Tel. (504)-925-6183	via Phone (with Chuck Seraboff of CISCO,Inc.)	TIES by CISCO, Inc. Pasadena, MD
ME	Captain Arlo Lund Planning & Research Maine State Police 36 Hospital Street Augusta, ME 04333 Tel. (207)-289-2200	via Phone (with Chuck Seraboff of CISCO,Inc.)	TIES by CISCO, Inc. Pasadena, MD
MD	Carl F. Banaszewski Director Planning & Research Maryland State Police 1201 Reisterstown Road Pikesville, MD 21208-3899 Tel. (301)-486-3101 ext.215	via Phone (with Chuck Seraboff of CISCO,Inc.)	TIES by CISCO, Inc. Pasadena, MD
		via Phone (with Mike Maloney of Cambridge MD Police)	Police Computer System by IPTM Univ. of North Florida
		via Phone (with Bill Walsek of Port Admin. Balt., MD)	Police Computer System by IPTM Univ. of North Florida
MA	Lieutenant Thomas Kennedy Research & Development Unit Massachusetts State Police 1010 Commonwealth Avenue Boston, MA 02115 Tel. (617)-829-5336	via Phone (with Chuck Seraboff of CISCO,Inc.)	TIES by CISCO, Inc. Pasadena, MD

ST	AGENCY & CONTACT PERSON	RESPONSE	PTS-MIS SOFTWARE
MI	John K. Longstreth, Chief Operations Research Section Michigan State Police 714 South Harrison Road East Lansing, MI 48823 Tel. (517)-337-6150	via Phone (with Chuck Seraboff of CISCO,Inc.)	TIES by CISCO, Inc. Pasadena, MD
MN	Major Arthur A. Rinta Planning, Training, Budget Minnesota State Patrol 107 State Transportation Building Saint Paul, MN 55155 Tel. (612)-296-6579	via Mail	None
MS	Captain Arthur Richardson Research, Planning, Training Department of Public Safety/ Highway Patrol P.O. Box 958 Jackson, MS 39205 Tel. (601)-987-1337	via Phone (with Wil Stann)	None
MO	Captain J. R. Phillips Director Research & Development State Highway Patrol P.O. Box 568 Jefferson City, MO 65102 Tel. (314)-751-3313	via Phone	None
MT	Frank E. Willems Administrative Service/ Planning & Research Montana Highway Patrol 303 North Roberts Helena, MT 59620 Tel. (406)-444-3000	via Mail	None

ST	AGENCY & CONTACT PERSON	RESPONSE	PTS-MIS SOFTWARE
NE	Lieutenant Don Niemann Research & Planning Nebraska State Patrol Box 94907 Lincoln, NE 68509-4907 Tel. (402)-471-4545 ext.43	via Mail	None
NV	Captain Paul McGrath Office of the Chief Nevada Highway Patrol 555 Wright Way Carson City, NV 89701 Tel. (702)-885-3323	via Phone (with John Turcich)	None
NH	Major William R. Gray, Jr. Operations Bureau New Hampshire State Police James Hayes Safety Building Hazen Drive Concord, NH 03305 Tel. (603)-271-2728	via Mail	None
NJ	Captain Francis M. Callahan Planning Bureau New Jersey State Police P.O. Box 7068 West Trenton, NJ 08625 Tel. (609)-882-2000 ext.2840	via Phone (with Chuck Seraboff of CISCO,Inc.)	TIES by CISCO, Inc. Pasadena, MD
		via Phone (with Jerry Lieberman of Port Authority NY and NJ)	Police Computer System by IPTM Univ. of North Florida
		via Phone (with Lt. Frank of Roxbury, NJ Police)	Police Computer System by IPTM Univ. of North Florida

ST	AGENCY & CONTACT PERSON	RESPONSE	PTS-MIS SOFTWARE
NM	Ron Mascarenas Chief Planner Planning Division New Mexico State Police P.O. Box 1628 Santa Fe, NM 87501 Tel. (505)-827-9056	via Mail	None
NY	Department Chief Inspector Fred Thumhart Planning & Research New York State Police State Campus, Building 22 Albany, NY 12226 Tel. (518)-547-6712	via Mail	EDCRASH (purchased but not yet used)
NC	Captain W. D. Teen Research & Planning North Carolina Highway Patrol 512 North Salisbury Street P.O. Box 27611 Raleigh, NC 27611 Tel. (919)-733-5282	via Phone (with Chuck Seraboff of CISCO, Inc.)	TIES by CISCO, Inc. Pasadena, MD
ND	Richard J. Anagnost Assistant Superintendent North Dakota Highway Patrol State Capitol Bismarck, ND 58505-0155 Tel. (701)-224-2455	via Phone	None
OH	Captain J. R. Prather Planning & Research Ohio State Highway Patrol 660 East Main Street Columbus, OH 43205 Tel. (614)-466-2896	via Phone (with Chuck Seraboff of CISCO, Inc.)	TIES by CISCO, Inc. Pasadena, MD

ST	AGENCY & CONTACT PERSON	RESPONSE	PTS-MIS SOFTWARE
OK	First Lieutenant Don Burrows Planning & Research Oklahoma Highway Patrol P.O. Box 11415 Oklahoma City, OK 73136 Tel. (405)-427-8341	via Phone (with Gene Thaxton)	None
OR	Sergeant Bernard A. Giusto Training Division-Planning and Research Oregon State Police 107 Public Service Building Salem, OR 97310 Tel. (503)-378-3720	via Mail	None
PA	Lieutenant Robert S. Grebas Bureau of Research and Development Pennsylvania State Police 1800 Elmerton Avenue Harrisburg, PA 17109 Tel. (717)-783-5536	via Phone (with Chuck Seraboff of CISCO,Inc.)	TIES by CISCO, Inc. Pasadena, MD
RI	Lieutenant David M. Driscoll Planning & Research Rhode Island State Police P.O. Box 185 North Scituate, RI 02857 Tel. (401)-647-3311 ext. 273	via Phone (with Mr. Delancey)	None
SC	South Carolina Highway Patrol 5400 Broad River Road Columbus, SC 29210 Tel. (803)-758-3315	via Phone (with Captain Morris)	None

ST	AGENCY & CONTACT PERSON	RESPONSE	PTS-MIS SOFTWARE
SD	Major Larry Zwenke South Dakota Highway Patrol State Capitol Building 500 East Capitol Pierre, SD 57501 Tel. (605)-773-3105	via Phone (with Major Jones)	None
TN	Major Paul D. Tackett Planning & Research Department of Public Safety 1228 Andrew Jackson State Office Building Nashville, TN 37219 Tel. (615)-741-1815	via Phone (with Bean Tyler)	None
TX	Maurice Beckham, Chief Inspectionn & Planning Division Department of Public Safety Box 4087 Austin, TX 78773 Tel. (512)-465-2137	via Phone (with Chuck Seraboff of CISCO,Inc.)	TIES by CISCO, Inc. Pasadena, MD
UT	Glenn W. Coffman Program Coordinator Planning and Research Utah Highway Patrol 4501 South 2700 West Salt Lake City, UT 84119 Tel. (801)-965-4518	via Mail	None
VT	Vermont State Police 103 South Main Street Waterbury, VT 05676 Tel. (802)-323-2000	via Phone (with Margaret Reschke)	None

ST	AGENCY & CONTACT PERSON	RESPONSE	PTS-MIS SOFTWARE
VA	William T. Bonacum, Director Planning Unit Department of State Police P.O. Box 27472 Richmond, VA 23261-7472 Tel. (804)-323-2015	via Phone (with Chuck Seraboff of CISCO,Inc.)	TIES by CISCO, Inc. Pasadena, MD
WA	Lieutenant G.O. Wehnes Research & Development Washington State Patrol General Administration Building AX-12 Olympia, WA 98504 Tel. (206)-753-4453	via Mail	None (custom design using TAS and Condor databases)
WV	Sergeant H.A. Outman Research & Planning Department of Public Safety 725 Jefferson Road South Charleston, WV 25309 Tel. (304)-746-2188	via Phone (with Officer Spencer of Morgentown WV Police)	Police Computer System by IPTM Univ. of North Florida
WI	John Schoenick Chief of Planning Research & Planning Section Division of State Patrol P.O. Box 7912 Madison, WI 53707 Tel. (608)-266-3215	via Phone (with Chuck Seraboff of CISCO,Inc.)	TIES by CISCO, Inc. Pasadena, MD
WY	Colonel W.O. Oyler, Director Wyoming Highway Patrol Headquarters Staff P.O. Box 1708 Cheyenne, WY 82002-9019 Tel. (307)-777-7301	via Phone (with Marsha Ranier)	None

APPENDIX I

LIST OF EXISTING PTS-RELATED SOFTWARE

Contract DTNH22-85-C-05081

LIST OF EXISTING PTS-RELATED SOFTWARE

CHARACTERISTICS	VENDOR: IPTM, Univ. of North Florida
	PRODUCT: Police Computer System
VENDOR INFORMATION: University of North Florida IPTM 4567 St. Johns Bluff Road Jacksonville, Florida 32216	TEL: (904) 646-2722
SYSTEM CHARACTERISTICS:	
CPU Type	IBM PC Compatible CPU
Operating System(s)	MS-DOS
Main Memory Required (bytes)	256 K Bytes
Mass Storage Device(s)	10+ MB Hard Disk Req'd
DATABASE CHARACTERISTICS:	
Relational/Hierarchical Structure	Relational
English-like Query Language	Yes(After Customization)
Dedicated To PTS	Yes(After Customization)
VENDOR SUPPORT:	
Free Demonstration Available	Not By Vendor
Hotline Support	Not Available
Nationwide Distributors/Dealers	Not Available
PRICING:	
Unit Price Without Hardware	$7,200
Training Fee (1 Session)	Included in Unit Price
Cost For Updates	Free for 1 Year
EASE OF OPERATION:	
No. of Hours Involved in Learning Basic Operations by Non-Computer Person	Approx. 40 Hours After Training
No. of Hours Involved in Learning Basic Operations by Computer Person	Approx. 30 Hours After Training
POPULAR COMPATIBLE COMPUTERS (HARDWARE):	
IBM PC	$2,370 (Standard System)
Monroe Business 2000	$3,095 (Standard System)

UTILIZATION OF RECOMMENDED PTS DATA ELEMENTS

CHARACTERISTICS	VENDOR: IPTM, Univ. of North Florida
	PRODUCT: Police Computer System
VENDOR INFORMATION: University of North Florida IPTM 4567 St. Johns Bluff Road Jacksonville, Florida 32216	TEL: (904) 646-2722

* "Police Computer System" sold by University of North Florida is based on the Condor DBMS and is "not" an off-the-shelf PTS-MIS because the IPTM staff customizes a PTS-MIS and/or other MIS according to the specific requirements of an agency. Therefore, it is difficult to say which of the Recommended PTS Data Elements in this report can be stored and processed by the IPTM's Police Computer System.

* Utilizing the personnel who are familiar with software design, police traffic services, and agency administrations, the IPTM customizes a PTS-MIS for an agency and provides the agency with user training for the particular system they design. Since the has to keep the trained staff for customization, training, and nationwide travel, and to pay a license fee for the Condor DBMS, the cost for a customized PTS-MIS is extremely high.

LIST OF EXISTING PTS-RELATED SOFTWARE

CHARACTERISTICS	VENDOR: CISCO, Inc.
	PRODUCT: TIES

VENDOR INFORMATION:
   CISCO, Inc.
   8032 Jumpers Mall
   No. 507
   Pasadena, MD 21122
	TEL: (301) 760-0780

SYSTEM CHARACTERISTICS:	
CPU Type	MS-DOS & CP/M based
Operating System(s)	MS-DOS & CP/M
Main Memory Required (bytes)	128 K Bytes
Mass Storage Device(s)	Dual Floppy Disk System
DATABASE CHARACTERISTICS:	
Relational/Hierarchical Structure	Relational
English-like Query Language	Yes
Dedicated To PTS	No
VENDOR SUPPORT:	
Free Demonstration Available	No
Hotline Support	No
Nationwide Distributors/Dealers	No
PRICING:	
Unit Price Without Hardware	$2,500
Training Fee (1 Session)	$500
Cost For Updates	
EASE OF OPERATION:	
No. of Hours Involved in Learning Basic Operations by Non-Computer Person	Approx. 24 Hours
No. of Hours Involved in Learning Basic Operations by Computer Person	Approx. 16 Hours
POPULAR COMPATIBLE COMPUTERS (HARDWARE):	
IBM PC	$2,370
CP/M Based Computers	Varied

UTILIZATION OF RECOMMENDED PTS DATA ELEMENTS

CHARACTERISTICS	VENDOR: CISCO, Inc.
	PRODUCT: TIES

VENDOR INFORMATION:
   CISCO, Inc.
   8032 Jumpers Mall
   No. 507
   Pasadena, MD 21122
	TEL: (301) 760-0780

* TIES is a traffic accident analysis program based on RM Cobol. It stores and processes data relative to vehicle accidents.	